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Gender Disparity in South Asia

Comparisons Between and Within Countries

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While gender disparities in health and education outcomes are higher on average in South Asian than in other countries, the large within country differences in gender disparity, between Indian states or Pakistani provinces, demand more local explanations.

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Summary findings

Using data assembled from the Demographic Health Surveys of over 50 countries and from the National Family Health Surveys of individual states in India, Filmer, King, and Pritchett create a new data set of comparable indicators of gender disparity. They establish three findings:

- As is by now well-known, the *level* of gender disparities in health and education outcomes for girls in South Asia is the highest in the world.
- Even within South Asia, and within India or Pakistan, there are huge variations in gender disparity. *Differences* in gender disparity among Indian states or among provinces of Pakistan are typically greater than those among the world's nations. The ratio of female to male child mortality in one Indian state (Haryana) is worse than in any country in the world, although in another state (Tamil Nadu) it is lower than in all but three countries.
- Across and within the set of developing nations, gender disparity is not only a phenomenon of poverty. There is almost no correlation between per capita income and the gender disparities in health and education outcomes. So although *absolute levels* of health and education outcomes for girls are strongly related to economic conditions, the *disparities* between outcomes for girls and boys are not.

Understanding what causes such great gender disparity *within* South Asia is the next pressing question for researchers.

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Gender Disparity in South Asia: Comparisons between and within Countries

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Gender Disparity in South Asia: Comparisons between and within Nations

Introduction

On one level, gender disparity can be narrowly defined as the purely descriptive observation of different outcomes between males and females. However, to move beyond the descriptive level to ask what might *cause* gender disparities reaches into the complex interplay of the possible sources. Discrimination (the differential treatment of individuals because of their gender), biological differences, individual and societal beliefs and attitudes about appropriate gender-specific roles, and the choices of individuals and households based on all of these factors (and more, such as an individual's own circumstances) all play a role in determining gender disparities. These factors are causally interrelated and it is very difficult to disentangle what are the underlying causes and what are merely proximate indicators or symptoms. Our objective in this paper is very modest. We will not propose a theory of the causes; we remain entirely at the descriptive level of differences in outcomes.

While the data contain a wide range of indicators, we focus on and document gender disparities principally for children in two main areas: health outcomes, including treatment of illness, and educational enrollments[1]. We focus on these outcomes for children for two main reasons. First, the data are available and generally comparable across countries. Second, outcomes for children, such as child mortality, are relatively less influenced by choices of the

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[1] The full set of indicators is described and summarized in Appendices 1 and 3.

children themselves and potentially more indicative of differential treatment by their parents (and other adults) and hence may indicate more clearly one particular source of gender disparity[2].

This approach of using the rich data provided by the Demographic and Health Surveys (DHS) to examine gender disparity has been used in past studies (Arnold, 1992, Hill and Upchurch, 1995) which also examined gender differentials in outcomes using these data. This study updates theirs and includes the relatively unique feature of combining data at the country level with data from individual states of India and provinces of Pakistan. What's the value added of this innovation? In comparative data each country is typically treated as a single unit, irrespective of its size. India is enormous, with a population of over 900 million which is twice as large as all countries in Africa combined, or all countries in Latin America (South and Central America and the Caribbean) combined. The state of Uttar Pradesh has a population of over 140 million, which would make it the world's sixth largest country.

But size alone is not the right criterion for determining the value of cross-country (versus within-country) comparisons, as it depends on the empirical characteristics of the phenomena to be examined. Since countries, almost by definition, share a common currency and have free internal trade, one might expect economic phenomenon like inflation to be similar in all parts of the same country. In examining the relationship between money supply growth and inflation, little would be gained by considering Minneapolis and Miami separately,

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[2] While some might argue that some gender disparities, like differential participation in the paid labor force or the gender division of labor, are the result of a joint, voluntary, and optimal decision-making on the part of a couple as a household unit, it would be very difficult to argue that female children voluntarily assume higher mortality risks.

as over the long-run they would be expected to have nearly the same inflation rate[3]. If, on the other hand, one were examining an economic outcome determined by local conditions, like expenditures on heating, little would be gained by aggregating cities like Minneapolis where the average January temperature is 11.8F (-11.2C) and Miami which basks in 67.2F (19.6C) temperatures even in January simply because they are in the same country.

The value of disaggregating data on gender disparities to the subnational level depends on the extent to which they are "national" phenomena determined by conditions associated with a particular national government, versus the extent to which they are local phenomena, determined by social, cultural, environmental, economic or political conditions that vary sharply within a country. As documented below, our finding is that while gender disparities in South Asia are partly "national", but there are also enormous variations within countries.

I) The data

A perennial problem with cross-national comparisons is without doubt the degree of comparability and reliability of the data across countries. In order to avoid these problems, we use data drawn from a collection of household surveys that used a nearly identical survey instrument and methodology in each country (or area) -- the Demographic and Health Surveys (DHS) and the National Family Health Surveys (NFHS)[4].

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[3] Between 1980 and 1992 cumulative inflation was 66 percent in Miami and 71 percent in Minneapolis (Statistical Abstract of the United States, table 759).

[4] Details on the questionnaires and surveys are in Appendix 1.

The DHS are nationally representative random samples of households, from which a woman of reproductive age was interviewed[5]. The data used here are from 69 surveys from 52 countries carried out between 1985 and 1995, with sample sizes varying from 1,623 (Nepal 1987) to 28,168 women (Indonesia 1994)[6]. The measures of gender disparity are derived from the Final Report issued for each survey. The questionnaire has been revised several times and not all questions are asked in all countries, so that not all data are available for all countries. Moreover, certain of the statistics are reported for slightly different populations; for example, the coverage for Acute Respiratory Infections ranges from children under three years old in some countries to children under five in others. While these may affect levels, we hope that these differences do not substantively affect the comparisons of female to male *ratios* of the indicators. In general, however, these are some of the most comparable data of this type, and certainly the most widely available.

The NFHS were carried out in 26 Indian States between 1992 and 1993 using a format very similar to that of the DHS. The sample sizes in the states range from 882 (Arunachal Pradesh) to 8,722 women (Uttar Pradesh). Although the survey instruments were very similar across states, some of the Final Reports do not report gender-disaggregated results for certain indicators (primarily because of small sample sizes). Hence, even within India, not all the data are available for all states.

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[5] National representativeness is usually achieved through weighting as the samples are often stratified random samples.

[6] The sample used in Arnold (1990) includes 26 surveys and countries, that in Hill and Upchurch (1995) includes 38 surveys from 35 countries.

The 1990/91 DHS Final Report for Pakistan does not report gender-disaggregated outcome measures by province. In order to provide comparable information for these provinces, we use the DHS raw data and reconstruct the outcome measures. Because of the small sample sizes in Baluchistan, additional information was used to create accurate measures of gender disparity in that province[7].

II) Gender disparities between and within countries in South Asia

We discuss two broad types of indicators: those related to health, which include data on mortality, morbidity, health treatments, and anthropometrics; and educational enrollments at various ages.

A) Health indicators

Mortality outcomes. As an indicator of gender disparity, the ratio of female to male child mortality, defined as the chance of a child dying after turning one but before turning five, is preferable to other mortality indicators. Unlike other studies, we do not normalize mortality rates to a reference population but report actual ratios, a point we return to below. Under-five mortality (5q0) is conventionally divided into neonatal (less than one month), post-neonatal infant (between one month and the first birthday), and child (4q1) mortality[8] as deaths at these various ages are typically due to different causes and reflect different disease conditions and health-seeking behaviors by parents. There are two reasons to believe that 4q1

[7] See Appendix 1 for details.

[8] The notation *4q1* denotes the probability of a child dying between exact age one and the fifth birthday, and *5q0* is the probability of dying between birth and the fifth birthday.

is a better indicator of gender disparity, especially of the type that reveals behavioral differences, than mortality at other ages.

First, there is very little correlation between the gender ratios of neonatal and child mortality; in the sample outside of South Asia, the correlation is even mildly negative. It is reasonable to believe that, aside from outright infanticide, neonatal deaths are unlikely to be influenced by gender, because they are partly genetically determined and partly determined by prenatal care, when few mothers know the sex of the child. Second, the disparities in the mortality ratios by gender grow with age. The median gender ratios in the non-South Asian countries, Indian states, and Pakistani provinces are nearly the same for neonatal mortality (.78, .82 and .75), somewhat different for post-neonatal mortality (.93, 1.13 and 1.02), and, as shown in table 1, very different for child mortality (1.0, 1.43 and 1.52). Similarly, the variance of outcomes is much larger at later ages. The cross-regional standard deviation of the gender ratio of mortality grows from .10 for neonatal to .22 for post-neonatal, and .34 for child mortality. These two facts suggest that the underlying pattern emerges more clearly in the later ages, as mortality then is less dependent on intrinsic genetic conditions and more determined by behavior.

Table 1: Ratio of female to male child mortality (4q1)							
	N	Med-ian	Std. Dev	Range			
				Highest		Lowest	
Non-South Asian countries	58	1.01	.17	Egypt (1992) Paraguay (1990) NE Brazil (1991)	1.46 1.23 1.22	Kazakstan (1995) Ghana (1993) Colombia (1990)	.47 .51 .51
India (States)	19	1.44	.35	Haryana Punjab Uttar Pradesh	2.35 1.81 1.70	Tamil Nadu Kerala Goa	.80 .94 1.11
Pakistan (Provinces)	4	1.52	.54	Punjab Baluchistan Sindh	2.06 1.79 1.24	NWFP	.86
South Asia	5	1.33	.25	Pakistan (1990) India (1992) Bangladesh (1993)	1.66 1.43 1.33	Sri Lanka (1987) Nepal (1996)	.99 1.24
Notes: A higher ratio indicates that females are MORE likely to die between ages one and four than are males.							

What do the data on child mortality ratios show? First, that gender disparities are worse in South Asian countries than in the rest of the world. Figure 1a shows a map of the world where the shading given each country reflects the female to male ratio in child mortality[9]. The median in the non-South Asian countries is exactly one, meaning that in a typical DHS country outside of South Asia, male and female children are equally likely to die between ages one and five. In Pakistan, India and Bangladesh, however, this is not the case. A girl is between 30 and 50 percent more likely to die between her first and fifth birthdays

[9] The cutoff points between the various levels are determined by pooling all the (country, Indian state, and Pakistani province) data and selecting the values at the 15th, 50th, and 85th percentiles.

than a boy[10]. Sri Lanka, in contrast, is more typical of non-South Asian countries. These findings confirm what has been shown in other data using, for instance, the difference in population sex ratios among countries (Sen, 1989).

However, a second important result is that this gender disparity is not uniform within South Asia, nor, more importantly, within the countries in South Asia. Particularly striking is the band across northern India and Pakistan where this gender disparity is substantially worse than in the south (Figure 1b). Moreover, there are much greater differences in gender disparity among the states of India than among countries in the rest of the world. Figure 1c shows the distribution of the mortality ratio within each country or region (as well as the area-specific values at the 25th, 50th, and 75th percentiles). The standard deviation is almost twice as large for Indian states (.35) than for the non-South Asian countries (.17). Some Indian states have quite low mortality differentials, actually slightly favoring girls (Tamil Nadu and Kerala), while many other Indian states have ratios higher than any non-South Asian country in the world. The same is true in Pakistan: some provinces are much worse, such as the Punjab where girls are *twice* as likely as boys to die, while others, like the Sindh, have mortality ratios that are higher than the international average but not as extreme. This large discrepancy between the "Northern Crescent" (mainly Pakistan and northern India) and the rest of India and South Asia has been noted before (see the discussion below).

[10] The country-wide numbers are not just the mean of the state (or province) level numbers as these would need to be population weighted.

Table 2:	Ratio of female to male children who received no treatment for episodes of fever or acute respiratory infection (ARI)						
	N	Median	Std. Dev	Range			
				Highest		Lowest	
Non-South Asian countries	34	1.02	.29	Colombia (1990) Togo (1988) Ondo State (1986)	2.04 1.58 1.44	Paraguay (1990) NE Brazil (1991) Ghana (1988)	.57 .66 .71
India	19	1.34	.29	Rajastan Punjab Bihar	1.79 1.67 1.59	Karnataka Tamil Nadu Kerala	.62 .85 .88
Pakistan	4	1.28	.55	Baluchistan NWFP Punjab	2.01 1.38 1.18	Sindh	.68
South Asia	3	1.19	.11	India (1992) Bangladesh (1993)	1.27 1.19	Pakistan (1990)	1.05
Notes: A higher ratio indicates that females are LESS likely to get treatment than men.							

Health treatment behavior. While mortality outcomes are clearly different between sexes, can we also see differences in the underlying gender discriminating behaviors that produce those outcomes? While it is relatively straightforward to document gender *disparity* in mortality ratios, it has been quite difficult to create comparable indicators of differential health treatment. In the DHS, the women surveyed were asked both whether their children (under a certain age, usually five years) had experienced fever, acute respiratory infection (ARI),[11] and diarrhea. If a mother reported her child had suffered from one of these conditions, she was then asked about various types of treatment the child had received. We

[11] The actual survey question refers to a cough with rapid breathing.

focus on the likelihood that, among the alternatives, a female versus a male child received "no treatment" when suffering from fever or ARI[12].

This table confirms both findings on mortality outcomes above. First, in the typical non-South Asian country, there is almost no gender disparity at all in whether children receive "no treatment" (1.02). In contrast, at the national or regional level, girls in South Asia are significantly less likely to receive treatment. The median for Indian states is 1.34, and for Pakistani provinces, 1.28.

But again, there is significant variation within the South Asian countries and the differences are as large within India as they are among non-South Asian countries. In certain states girls appear to be more likely to receive treatment (Tamil Nadu and Karnataka), while in others (Rajastan and Punjab) girls are strikingly less likely to receive treatment. There are similarly notable differences across the provinces of Pakistan.

Morbidity and anthropometrics. The reported frequencies of episodes of fever, ARI, or diarrhea do not indicate gender disparity. In contrast to either mortality outcomes or health care, these indicators are not higher in South Asia; nor are they correlated with mortality outcomes. This finding is consistent with either of two explanations. Perhaps, actually contracting diseases is equally likely for both genders and that only treatment differs, accounting for the different mortality outcomes. An alternative explanation is that female

[12] The data on diarrhea does not appear to be as reliable. In some countries there is not information on both fever and ARI. If only one exists, then the other is inferred; see Appendix 1 for details.

morbidity is under-reported; hence, the differentials in actual treatment per episode are even larger than reported.

Similarly, the anthropometric estimates do not indicate gender disparities. This could be for a variety of reasons, but one is that the severe malnutrition indicators, such as the fraction of the population that is three (or even two) standard deviations below reference group norms, were very unreliably estimated[13].

B) Educational enrollment

For the households interviewed in the more recent surveys, the DHS reports whether or not each child is "attending" school. Beyond the questions of national (or area) representativeness, the data are potentially better than national statistics both because they are based on reported attendance, not official enrollment, and because they compare children of similar ages rather than by grades. The data are broken down into two age groups, ages 6-10 and 11-14 (with some variation in the cutoff ages across countries). We focus mainly on children in the 11-14 age range, as they are still young enough to be part of the "basic" education cycle of most countries but are reaching the ages when any gender-based discrimination in education may worsen. In contrast, the 6-10 age range is potentially more problematic an indicator as so many countries have achieved 100 percent enrollment for both sexes. The correlation between the gender ratios of enrollment for the two age groups is quite high at .84.

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[13] This lack of association among alternative indicators was found also in the other studies discussed below.

The ratio of female to male enrollment confirms the patterns of gender disparity in mortality outcomes and health treatments (see table 3). The ratio for the countries outside of South Asia is .91 (see also figure 3a) which is perhaps surprisingly near gender neutrality, although one might suspect that the real differences emerge more strongly beyond the basic education level, in upper secondary and tertiary education. The average of Pakistani provinces is strikingly lower, with even the highest province-level ratio reaching only .69. In India the median for the 25 states is .86. But since in some of the larger states the ratio is quite low -- for instance, in Uttar Pradesh the ratio is only .6, which is near the lowest for any country in the world -- the overall mean for India is only .72.

Again, the disparities within India and Pakistan, and certainly within South Asia, are nearly as large as the differences across countries. India has states with no gender disparity at all (Kerala) and states in which girls are only half as likely to attend school (Rajastan) (figures 3b and 3c). Within South Asia, Bangladesh appears to be doing modestly better.[14]

[14] This may be due to the fact that Bangladesh has been targeting education subsidies towards girls in an explicit effort to achieve gender equality in schools. In 1992, the government initiated a program of free tuition for all girls attending junior secondary schools, which resulted in a dramatic rise in female enrollment that year. This program was replaced in 1994 by an expanded nationwide program that offers both free tuition and stipends to girls in secondary schools.

Table 3: Ratio of female to male enrollment, children aged 11-14							
	N	Med-ian	Std. Dev	Range			
				Highest		Lowest	
Non-South Asian countries	36	.91	.19	Zambia (1992) NE Brazil (1991) Dom. Rep. (1991)	1.09 1.09 1.05	Jordan (1990) Yemen (1991) Niger (1992)	.33 .37 .50
India	25	.86	.14	Nagaland Kerala Delhi	1.01 1.00 1.00	Rajastan Bihar Uttar Pradesh	.49 .55 .60
Pakistan	4	.52	.19	Punjab Sindh NWFP	.69 .66 .37	Baluchistan	.34
South Asia	4	.70	.13	Bangladesh (1993) India (1992) Nepal (1996)	.93 .72 .67	Pakistan (1990)	.64
Notes: A higher ratio indicates that females are MORE likely to be enrolled than are males.							

III) Patterns of overall gender disparity

The first question that might occur to one when observing cross-national differences in any indicator of the standard of living is to ask to what extent the differences are associated with differences in the overall standard of living, say, as measured by overall per-capita income. The levels of many socio-economic indicators are strongly associated with per-capita income, like infant or under-five mortality (Pritchett and Summers, 1996, Filmer and Pritchett, 1997), male and female educational attainment and enrollment levels (King and Hill, 1993; Ahuja and Filmer, 1996), malnutrition, and the fraction of population in poverty (Bruno, Ravallion, and Squire, 1996). This is true in our data as well: the level of income has a strong relationship with the level of child mortality and the enrollment rate. However, other indicators, particularly of the distribution of the standard of living, are not at all correlated with the average level of income (Bruno, Ravallion, and Squire, 1996).

Our indicators of gender disparity also do not appear to be at all correlated with the general standard of living, as proxied by per-capita GDP, either across countries or within countries in South Asia. Table 4 reports the results of regressing three gender disparity measures on per-capita GDP[15]. The coefficients are very small. For instance, the coefficient of .031 in the child mortality regression suggests that an increase of 100 percent in per-capita income from the median would raise the female to male ratio by only roughly 3 percent at the median. Moreover, the t-statistics are consistently less than one; hence, the estimates are imprecisely estimated and decidedly statistically insignificant. There is no particular pattern to the coefficients, either across indicators or regions.

This lack of a relationship has several implications. First, if one is seeking to understand and explain the high levels of gender disparity in South Asia, low income is not one of the answers. In the sample, poorer countries do not, on average, have worse gender disparity than high-income countries. Moreover, within India the high-income areas also do not, on average, have less gender disparity. Gender disparity does not appear to be something that economies "grow out of."[16]

[15] Or, in the case of the states of India or provinces of Pakistan, a proxy for GDP per capita, see Appendix 1.

[16] Easterly (1997), using a broader sample that includes the richer countries, finds a relationship with gender specific enrollments.

Table 4: Coefficient of per-capita income in regressions of gender disparity on per-capita incomes						
Indicators	Gender disparity (female relative to male)			Female level		
	All*	Non South Asia	South Asia*	All*	Non South Asia	South Asia*
Child mortality (4q1)	.031 (.68) 82	.022 (.72) 56	.117 (0.51) 26	-47.9 (9.89) 81	-50.33 (8.85) 56	-24.36 (2.52) 25
Enrolled in school (ages 11-14(15))	.056 (1.41) 67	.043 (1.01) 36	.133 (1.26) 31	13.04 (2.78) 67	13.14 (2.52) 36	12.44 (1.03) 31
No treatment for fever or ARI	.052 (.65) 55	.064 (.78) 31	-.010 (.05) 24	-6.17 (2.11) 55	-4.34 (1.28) 31	-15.04 (2.36) 24

Notes: Each cell entry includes the coefficient (and t-statistic) for the natural log of GDP per capita, and the number of observations in the OLS regression.
* Includes regional subgroupings within India and Pakistan but excludes observations at the national level for those countries.

That said, the absolute level of female mortality is highly correlated with income both across countries and within India. In table 4, the coefficient of -47.9 in the child mortality regression suggests that a 10-percent increase in per-capita income from the median would lead to a 12-percent fall in the female child mortality rate. Therefore, rising income levels that do not *worsen* the gender disparity will tend to reduce both female and male mortality, and the disparity itself, the ratio of girls to boys that die, will not improve. An overall strategy for improving female health status might then involve actions both to improve overall standards of living together with measures aimed at the disparity[17].

IV) Relationship to previous work

We are obviously not the first to notice gender disparity in South Asia or its striking variation across states of India. Our modest contribution in this work is to bring together a new set of indicators that are comparable among nations and regions within South Asia. In this section we compare our results first to other studies within India, and then to other cross-national analyses.

A) Results for within-India

First, however, how do our indicators compare with other rankings? Table 5 displays the raw data on various indicators and how the various Indian states rank on each indicator (with higher ranks representing less gender disparity). This comparison shows how difficult analyses such as this can be. Some findings are robust: Kerala, reassuringly, is consistently near the top, while Uttar Pradesh is consistently near the bottom. However, Tamil Nadu is consistently near the top for the health indicators, but towards the bottom for education, and vice versa for Haryana. These differences could be a sign of the data being of dubious quality, or that the causes of the gender disparities vary across the types of outcomes under study.

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[17] The results for the effect of income on the pooled male and female mortality rates are in Appendix table A2.1.

Table 5: Indicators of gender disparity at the level of Indian States from various sources.

State	Child mortality[a]		Female / Male Population Ratio[b]		Female / male ratio of no treatment for ARI or fever[a]		Female / Male ratio of school enrollment (ages 11-14)[a]		Male female difference in rural literacy[b]		Rural female labor force participation[b]		Difference of Gender and unadjusted HDI[d]		Status of women[c]	
	Level	Rank	Level	Rank	Level	Rank	Level	Rank	Level	Rank	Level	Rank	Level	Rank	Level	Rank
Andrha Pradesh	1.28	7	973	3	1.45	15	0.67	22	19.3	7	46.60	8	7.3%	6	34.6	10
Arunachal Pradesh			861	23			0.92	8	18.3	16	67.10	2			27.0	19
Assam	1.12	4	925	13	1.27	7	0.90	10	15.7	19	55.40	6	8.4%	8	24.2	22
Bihar	1.55	13	912	18	1.59	17	0.55	24	24.1	21	15.30	18	13.6%	13	20.2	24
Delhi	1.55	12			1.16	4	1.00	3		3		25			36.9	6
Goa	1.10	3			1.38	13	0.98	5				24			49.0	1
Gujarat	1.42	9	936	10	1.39	14	0.79	16	23.4	9	20.20	14	6.4%	4	34.2	12
Haryana	2.34	19	874	22	1.28	8	0.83	14	24.7	12	7.60	23	24.3%	16	30.6	15
Himachal Pradesh	1.43	10	996	2	1.28	9	0.92	7	19.0	6	29.20	12	4.8%	1	34.7	9
Jammu and Kashmir	1.69	16	923	15	1.34	10	0.86	13		13	9.20	22			30.1	16
Karnataka	1.30	8	961	6	0.62	1	0.77	19	20.9	8	33.40	11	6.9%	5	34.6	11
Kerala	0.94	2	1040	1	0.87	3	1.00	2	5.8		20.20	13	6.3%	3	47.6	2
Madhya Pradesh	1.21	5	932	12	1.19	5	0.74	21	24.9	17	39.70	10	10.6%	9	25.5	20
Maharashtra	1.24	6	935	11	1.58	16	0.81	15	23.9	4	47.30	7	5.9%	2	36.9	7
Manipur			961	7			0.88	11	18.3		61.20	3			41.6	3
Meghalaya			947	8			0.99	4	4.8	11	60.80	4			33.7	14
Mizoram			924	14			0.96	6	8.4	1	60.60	5			40.9	4
Nagaland			890	19			1.01	1	11.0	2	72.60	1			40.8	5
Orissa	1.45	11	972	5	1.37	12	0.75	20	23.8	20	16.70	15	11.8%	10	24.0	23
Punjab	1.81	18	888	20	1.67	18	0.91	9	13.7	10	16.10	16	19.8%	15	33.7	13
Rajastan	1.59	14	913	17	1.79	19	0.49	25	28.8	18	16.10	17	13.2%	12	25.2	21
Tamil Nadu	0.80	1	972	4	0.85	2	0.79	18	21.5	5	39.80	9	8.2%	7	36.1	8
Tripura			946	9			0.86	12	18.8	14	14.30	19			29.3	17
Uttar Pradesh	1.70	17	881	21	1.34	11	0.60	23	25.8	22	9.40	21	15.8%	14	19.9	25
West Bengal	1.63	15	917	16	1.22	6	0.79	17	19.0	15	10.00	20	13.1%	11	28.3	18

Sources: (a) This study (b) Agarwal (1997) (c) Srivastava (1997) (d) Kumar (1996)

Table 6 shows the (rank) correlations of the various indicators to gauge the internal coherence of the set. The various indicators of gender differentials in health status are reasonably highly correlated: .77 between child mortality and the population sex ratio, and .36 and .40 between the health treatment disparity and child mortality and the population sex ratio, respectively. Between the enrollment ratio and the male-female literacy gap, the correlation is .57. The labor force participation of rural women is quite highly correlated with child mortality. The two indicators which are aggregates of various others, in particular, the "status of women" indicator which was created from various parts of the NFHS data, are (unsurprisingly) quite highly correlated with several of the other measures.

Table 6: Rank correlations among the various indicators of female / male disparity

		I	II	III	IV	V	VI	VII	VIII
I	Child mortality[a]	1							
II	F / M Population Ratio[b]	.77	1						
III	F / M no treatment for ARI or fever[a]	.36	.40	1					
IV	F / M school enrollment (ages 11-14)[a]	.22	.06	.31	1				
V	M-F difference in rural literacy[b]	.31	.33	.23	.57	1			
VI	Rural female labor force participation[b]	.61	.23	.08	.20	.32	1		
VII	Status of women[c]	.75	.83	.28	.39	.64	.72	1	
VIII	Difference of Gender and unadjusted HDI[d]	.50	.45	.25	.64	1	.22	.68	1

Sources: (a) This study (b) Agarwal (1997) (c) Srivastava (1997) (d) Kumar (1996)

There has been a fairly large body of literature which argues about the patterns and causes of gender differentials in outcomes within India, and we will not delve much into the debate here beyond stating that our findings are in line with those found elsewhere.[18] The most robust finding is that of a band across the North-Western States of India (and which extends into several provinces in Pakistan) in which there are large disparities in child mortality rates. The high gender disparities in Northern India and Pakistan have been pointed out before, perhaps most notably in Miller (1982, 1989, 1993), Murthi et al (1995), and Agarwal (1997) in which the focus was on juvenile sex ratios. Moreover, Miller (1982) points out the persistence of the disparity, going back to evidence from the 1872 census. Miller (1982) attributes the mortality differential to the relative neglect of girls in the allocation of food, medical care, and "love and warmth." Others have focused more specifically on the role of the quantity or quality of medical care (e.g. Das Gupta, 1989, Wyon and Gordon, 1971). In our results, however, there is a puzzle as to how these differentials come about: although we find that female disadvantage in absence of health care is higher in South Asia than elsewhere, neither differences in absence of health care nor differences in nutritional status (as reflected by wasting and stunting) show nearly as pronounced a band across the Northern States as mortality.[19]

Our finding that gender disparities are not systematically decreasing with income is also in line with other studies (see Murthi et al, 1995, for a description of this debate), although the result is perhaps not surprising given that gender disparities are observed to be

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[18] A useful summary of the claims and counter-claims and an assessment of these can be found in Murthi et al (1995).

[19] As pointed out before, the latter of these non-findings might be due to the fact that one is essentially looking at the tails of distributions of which may be hard to get reliable estimates.

highest in the generally wealthier Northern States. We do not find, however, that gender disparities are statistically significantly higher in states with higher income.

There is no consensus on the underlying determinants of the greater gender disparities found in the Northern Indian States. Much of the debate centers around the "worth" of female children, with the obviously problematic definition of "worth" being at the contentious center of the discussion. Miller (1982), for example, emphasizes the different roles of women in agriculture in the North versus the South. In the North, dry-field wheat cultivation is hypothesized to lead to a low demand for female labor relative to the South where wet-rice cultivation leads to a high demand for such labor. Rosenzweig and Schultz (1982), analyzing data for rural India, find that where the female employment rate was higher the sex difference in survival probabilities was somewhat smaller. Another hypothesis suggests that the increased relative bargaining power of women in contexts where their economic opportunities are higher, combined with a preference of women for investing in the human resources of their daughters (relative to the preference of men for investing in their daughters), leads to higher relative survival rates of female children (Folbre, 1984). In contrast, Das Gupta (1987) emphasizes the cultural rights and obligations which lead to a higher long-term value of a son relative to a daughter which she argues leads to dramatically high death rates for higher birth order daughters.

B) Other results across countries

Normalization. Our findings are also not the first to document cross-country differences. However, to compare the results of this study to others, a short digression on normalization is in order. Many other studies of gender disparities in mortality normalize all of the mortality ratios to a reference population. Hill and Upchurch (1995) use mortality rates in six Northern European countries from 1820-1963 and adjust the differential to the average level of mortality. Svedberg (1990) uses mortality from Sweden in the 1980s. Klasen (1996) and Svedberg (1996) debate the use of mortality in Sweden in the 1980s versus that in the "North" and "West" Model Life Tables of Coale, Demeny and Vaughn (1983). Since girls appear to exhibit biologically higher survival capability a normalization to underlying "natural" mortality rates would imply that an equal mortality ratio is an indicator of female disadvantage. We report actual mortality differentials because we feel that any given choice of normalization and its interpretation are problematic.

Reference populations are presumably chosen in order to answer a question like: "If there were absolutely no gender-based differential *treatment*, what would the observed mortality ratios be?" One way to answer this question is to use the mortality rates of a historical reference population, say Northern Europe in the 19th century, not necessarily because there was no gender discrimination, but because medical technology was (at best) ineffective, implying that mortality rates would not reflect differences in health-seeking behaviors based on gender. However, this seems problematic as medical advances that led to mortality gains in some causes of death and not others might then appear as increases in discrimination. For example, suppose in the historical period that one in ten boys died of disease and one in ten died of unavoidable accidents, and no girls died of disease and one in ten died of unavoidable accidents. Now suppose that advances in medical technology made it possible to cure all diseases. A country in which children only died of unavoidable accidents would have equal mortality outcomes, but when normed to the historical reference period, would appear to have an enormous gender disparity of 2. It hardly seems right that medical progress that leads to better survival chances be called an increase in gender disparity.

A second possibility is to norm to recent mortality rates in a richer, low mortality country. This represents the mortality when medical resources are effective and plentiful, which might represent "natural" mortality. As Svedberg points out, in one setting where medical technology is as advanced as possible (Sweden in the 1980s), "the child mortality rates are almost identical [for boys and girls], .29 and .28 respectively" (Svedberg, 1990, fn. 3). But this is not always the case. In the U.S., the death rate in ages 1 to 4 is .52 for boys and .41 for girls, so the gender ratio is .78. Hence, a country with equal male and female death rates normed to the U.S. ratios would have a gender disparity of 1.27. However, 62 percent of the gender difference in mortality is due to a greater frequency of accidental death from accidents, as the gender mortality ratio for accidents is .68 versus .86 for all other causes of death. If a country with equal death rates were normed to the U.S. death rates from non-accidental causes alone, the gender disparity would be 1.15. It seems extremely odd to argue that the reported gender disparity for a country with gender equal death rates should be so strongly influenced by the propensity of a reference population of U.S. boys to die of fatal accidents.

Results. The recent exchange between Svedberg and Klasen (Svedberg, 1990, 1996, Klasen, 1996) highlights the potential importance of normalizing. When normalizing mortality rates using the Northern European countries from 1820-1963 as the reference, Klasen finds that within Sub-Saharan Africa DHS samples, nine out of 14 countries exhibit excess female child mortality. Using a collection of 32 surveys from 20 countries compiled by Svedberg, he finds excess female child mortality in 20 of the 32 surveys. Using Svedberg's normalization on the other hand (modern day Sweden as the normalization, which comes close to no normalization at all for child mortality), the number of samples with excess female mortality is roughly equal to that with excess male mortality.

Beyond these disagreements though, the authors concur that anthropometric indicators do not show anti-female bias in the Sub-Saharan African samples. Perhaps more importantly for our paper, the authors both state that the differentials considered in the Sub-Saharan African context are much smaller than those found in South Asia.

For the cross-country analysis, our data source is most similar to Hill and Upchurch (1995) as they also use DHS data to construct their index of gender differentials. They find a female disadvantage in under-five mortality in 31 out of 38 surveys *relative* to the female disadvantage in a set of Northern European countries from 1820-1963 with matched average mortality. As mentioned above, such an interpretation must be made with caution. Consistent with our findings, however, they find that the region with the highest gender disparity in child mortality is the "Middle East Crescent" (which includes Egypt, Jordan, Morocco, Pakistan, and Tunisia).

As in our findings, Hill and Upchurch find that expanding the set of indicators does not necessarily reinforce the gender disadvantage result. For example, they find a disadvantage in the percent of females who are immunized in 58 percent of the samples, who are stunted and wasted in only 17 and 24 percent of the samples, who have had diarrhea or ARI in 9 and 26 percent of the samples, and who receive treatment of fever or ARI in 43 and 30 percent of the samples.

In an earlier study, Arnold (1992) also used DHS data to assess the prevalence of female disadvantage across countries (not normalized by reference population mortality). He found that the female child mortality rate was equal or higher to that of males in 18 of the 26 countries he included. Similarly to Hill and Upchurch, Arnold found that there was no clear pattern of female disadvantage in the prevalence or treatment of diarrhea, fever, and ARI, nor in the nutritional status indicators available.

Using the precursor surveys to the DHS, the World Fertility Surveys (WFS) carried out between 1974 and 1980, Rutstein (1984) reports the female and male mortality between the ages of two and five (3q2). Of 40 countries, Rutstein finds a higher female than male mortality rate in 25 countries.[20] The median female to male mortality ratio was 1.05 for the 36 non-South Asian countries, with a mean of 1.05 and a standard deviation of .23. The median female to male ratio was 1.17 for the four South Asian countries (Bangladesh, Sri Lanka, Nepal, and Pakistan) with a mean of 1.22 and a standard deviation of .18. Although Rutstein's findings indicate a somewhat higher rate for the non-South Asian countries than we do, the much higher level in the South Asian countries is consistent with our results.

Conclusion

This descriptive work is a first step in a research agenda that aims to examine the causes of gender disparity, and where possible, to suggest policies aimed at reducing it. However, even from this preliminary work there are four conclusions.

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[20] Portugal was dropped in this assessment.

First, South Asia is the region of the world in which gender disparities are noticeably the worst and for which this issue clearly constitutes a crucial part of the development agenda. While child mortality in countries outside of South Asia has been nearly equal between the sexes, it is 30 to 50 percent higher for female than male children in South Asia.

Second, even within South Asia, and even within India or Pakistan, there are huge variations in gender disparity. On some indicators of gender disparity, an Indian state may be very near the best or very near the worst observed in the rest of the world. In child mortality, some Indian states like Tamil Nadu and Kerala have much lower gender disparity than the average of non-South Asia countries (with a female to male ratio below 1), while others have a higher gender disparity than any other country in the world. The ratios of 2.35 (Haryana), 2.06 (Punjab-Pakistan), 1.81 (Punjab-India), 1.79 (Baluchistan), and 1.70 (Uttar Pradesh) are all more than a standard deviation higher than the *highest* in any non-South Asian country (Egypt, 1.46).

Third, unlike many indicators of standard of living and even many social indicators such as enrollment ratios, gender disparity is not correlated with level of income in this set of countries or across regions within South Asia. While the *level* of female mortality falls with rising incomes around the world, including in South Asia, the *ratio* between male and female child mortality does not appear to be related to income. Gender disparity is not a problem of poverty.

The fourth conclusion, which follows from the above three findings, is that understanding the causes of the large variations in gender disparity *within* South Asia is a pressing question for research. First, if research into causes of gender disparity could be at all useful in devising remedies when the gaps are so large, this is practically important. Second, the large variation within countries suggests that the underlying causes of gender disparity differ sharply. This variation makes studies within a single country attractive. Third, the fact that some countries in the region and individual units within nations have achieved much lower levels of gender disparity shows that greater gender equality is possible even within the South Asian context.

References

Agarwal, Bina, 1997. "Gender, Environment, and Poverty Interlinks: Regional Variations and Temporal Shifts in Rural India, 1971-91," World Development, 25(1):23-52.

Ahuja, Vinod, and Deon Filmer, 1996. "Educational Attainment in Developing Countries: New Estimates and Projections Disaggregated by Gender," Journal of Educational Planning and Administration, Vol3,4:229-254.

Arnold, Fred, 1992. "Sex preference and its Demographic and Health Implications," International Family Planning Perspectives, 18:93-101.

Bruno, Michael, Martin Ravallion, and Lyn Squire, 1996. "Equity and Growth in Developing Countries," Policy Research Working Paper No. 1563, The World Bank. Washington, DC.

Coale, Ansley J, Paul Demeny, and Barbara Vaughn, 1983. Regional Model Life Tables and Stable Populations, New York: Academic Pres.

Das Gupta, Monica, 1987. "Selective Discrimination against Female Children in Rural Punjab," Population and Development Review, 13(1):77-100.

Easterly, William, 1997. "Life During Growth," mimeo, Development Research Group, The World Bank, Washington, DC.

Filmer, Deon, and Lant Pritchett, 1997. "Child Mortality and Public Spending on Health: How Much does Money Matter?" mimeo, Development Research Group, The World Bank, Washington, DC.

Folbre, Nancy, 1984. "Market Opportunities, Genetic Endowments, and Intrafamily Resource Distribution: Child Survival in Rural India: Comment," American Economic Review, 74(3):518-520.

Government of India, 1994. Economic Survey, Ministry of Finance, Economic Division.

Hill, Kenneth, and Dawn M. Upchurch, 1995, "Gender Differences in Child Health: Evidence from the Demographic and Health Surveys," Population and Development Review, 21(1):127-151.

King, Elizabeth M, and M. Anne Hill, 1993. Women's Education in Developing Countries: Barriers, Benefits and Policies. Baltimore MD.: Johns Hopkins Press.

Klasen, Stephan, 1996. "Nutrition, Health and Mortality in Sub-Saharan Africa: Is There a Gender Bias," Journal of Development Studies, 32(6):913-932, 944-948.

Kumar, A.K. Shiva, 1996. "UNDP's Gender Related Development Index: A Computation for Indian States," Economic and Political Weekly, April 6, 1996.

Miller, Barbara D., 1982. The Endangered Sex. Neglect of Female Children in Rural North India. Ithaca and London: Cornell University Press.

Miller, Barbara D., 1989. "Changing Patterns of Juvenile Sex Ratios in Rural India, 1961 to 1971," Economic and Political Weekly, June 3, 1989.

Miller, Barbara D., 1993. "On Poverty, Child Survival and Gender: Models and Misperceptions," Third World Planning Review 15(3):6-13.

Murthi, Mamta, Anne-Catherine Guio, and Jean Drèze, 1995. "Mortality, Fertility, and Gender Bias in India; A District Level Analysis," Population and Development Review 21(4):745-782

Pritchett, Lant, and Laurence H. Summers, 1996. "Wealthier is Healthier," Journal of Human Resources, 31(4):841-868.

Rosenzweig, Mark R., and T. Paul Schultz, 1982. "Market Opportunities, Genetic Endowments, and Intrafamily Resource Distribution: Child Survival in Rural India," American Economic Review, 72(4):803-815.

Rutstein, Shea Oscar, 1984. "Infant and Child Mortality: Levels, Trends, and Demographic Differentials," World Fertility Surveys Comparative Studies No. 43. Voorburg, Netherlands: International Statistical Institute.

Sen, Amartya, 1989. "Women's Survival as a Development Problem," Bulletin of the American Academy of Arts and Sciences, 43.

Srivastava, Dr. B.P. 1997. Personal communication on work undertaken at the Institute of Population, Environment and Development, Lucknow, India.

Svedberg, Peter, 1990. "Undernutrition in Sub-Saharan Africa: Is There a Gender Bias?" Journal of Development Studies, 26:469-486.

Svedberg, Peter, 1996. "Gender Biases in Sub-Saharan Africa: Reply and Further Evidence" Journal of Development Studies, 32(4):933-943.

Wyon, John B., and John E. Gordon, 1971. The Khanna Study: Population Problems in the Rural Punjab, Cambridge, MA: Harvard University Press.

Appendix 1: Data sources and description

The data used in this study are compiled from (1) DHS Final Reports (2) NFHS Final Reports and (3) Reconstructed gender and provincial disaggregated outcomes for Pakistan. Except for a very few exceptions, the transformations required to go from the published data to that used here involve no more than taking the ratio of the female to the male value. The exceptions are discussed below.

Baluchistan province of Pakistan

Because of the limited data from the Baluchistan province of Pakistan, the data were adjusted as follows. The female/male child mortality ratio (4q1) is not that derived from the DHS but is calculated from the Pakistan Integrated Household Survey (PIHS) which was carried out in 1991. The ratio as calculated from the DHS data is 8.92 (4q1 for males is 6.4, for females it is 57.1, which seems implausible). The ratio calculated from the PIHS is equal to 1.79. In the calculation of consultation and no treatment the ratios are again implausible when including all children who suffered from diarrhea, ARI, and fever. These ratio are replaced by the ratio including only those who had a sample weight of less than 1. The corresponding changes in the data are as follow:

Changes made to Baluchistan female / male ratios for 6 variables			
Description	Name	Raw ratio	Ratio using only those observations with weight less than 1
Female relative to male : percent with ARI who were taken for consultation (usually includes hospital, health center, clinic, doctor, or other health professional)	aritd	.713	1.00
Female relative to male : percent with fever who were taken for consultation	fevtd	.519	.984
Female relative to male : percent with diarrhea who were taken for consultation	diatd	2.82	.271
Female relative to male : percent with ARI who received no treatment	arind	9.09	2.60
Female relative to male : percent with fever who received no treatment	fevnd	2.32	1.42
Female relative to male : percent with diarrhea who received no treatment	diand	5.09	3.26

Consultation and no treatment of Fever or ARI

Conditional on a child having suffered from fever or ARI respondents were asked whether the child was taken to a health facility or provider for a consultation. However, not all countries have this number for both fever and ARI. In order to create and "index" of the female/male ratio of consultation for fever or ARI, the data is "filled in" by predicting the ratio for ARI (from a regression of ARI on fever) and using the predicted value when the actual value for ARI is missing and that for fever is not, and vice versa for fever. The "index" is just the mean of these two variables. An equivalent method is used to generate an "index" for the ratio for no treatment of children with fever or ARI.

Description of data

The list of variables and their detailed descriptions, the number of non-missing values, their means and standard deviations across all observations, are in table A1-1. The list countries, year of the surveys, sample sizes (i.e. the number of women interviewed), and the types of data available by country are given in table A1-2. In addition, the summary statistics for each of the indicators in the data are given in Appendix 2, Table A2-1.

Income data

The data used for income across different countries are from the Penn World Tables 5.6 (PWT) and the variable used is the real per capita GDP per capita expressed in 1985 international dollars (i.e. these are purchasing power adjusted quantities). For countries which do not have data up until the date of the survey, the data are extrapolated from the last two years for which actual data exist.

The income data for states India are derived from Government of India's 1993-94 Economic Survey (Government of India, 1994) which reports state level per capita net State Domestic Product for 1991-92. These are "converted" into 1985 international dollars and scaled for the difference between net State product and GDP, using the conversion implied by the comparison of the (weighted) average Indian net state product to the Indian real GDP per capita from the PWT.

The income data for the provinces of Pakistan are derived from household expenditures per capita from the 1991 PIHS. The Province level per capita expenditures are "converted" into 1985 international dollars and scaled for the difference between per capita expenditures and GDP per capita, using the conversion implied by the comparison of the average Pakistani household per capita expenditures to real GDP per capita from the PWT.

Table A1-1: Variables				
Description	Name	Number of obser-vations	Mean	Std. Dev.
Marriage and fertility				
Percent who have never married : women aged 15-19	w1519nm	94	75.01	14.36
Percent who have never married : women aged 20-24	w2024nm	94	33.49	15.23
Median age at first marriage : women 20-49	w2049mm	53	17.61	1.506
Median age at first marriage : women 25-49	w2549mm	82	18.42	1.993
Percent who have never had a birth : women 15-19	w1519nb	94	84.34	8.763
Percent who have never had a birth : women 20-24	w2024nb	94	40.97	15.003
Median age at first birth : women 20-49	w2049mb	30	19.12	0.553
Median age at first birth : women 25-49	w2549mb	79	20.41	1.342
Education				
Female relative to male:percent of household population in school : ages 6-10 (4 observations are either 6-11, 7-10, or 7-12)	enr1d	68	0.8908	0.15
Female relative to male:percent of household population in school : ages 11-14 (15) (4 observations are either 12-14, 13-15, or 13-16)	enr2d	68	0.8199	0.184
Infant and child mortality				
Female relative to male : neonatal mortality	mrtnnd	66	0.802	0.114
Female relative to male : post-neonatal mortality	mrtpnnd	65	1.0011	0.188
Female relative to male : infant mortality	mrt1q0d	88	0.8705	0.109
Female relative to male : child mortality	mrt4q1d	85	1.1365	0.317
Female relative to male : under-five mortality	mrt5q0d	87	0.9422	0.119
Vaccinations				
Female relative to male : percent with all vaccinations (i.e. BCG, measles, and three doses of DPT and polio vaccine) from vaccination card or mother's report : children aged 12 to 23 months (1 observation is for 0 to 59 months, 1 observation is for 12 to 59 months)	vacalld	71	0.9679	0.124
Female relative to male : percent with no vaccinations	vacnond	61	1.1727	0.493

Continued...

Table A1-1 continued: Variables				
Description	Name	Number of observations	Mean	Std. Dev.
Incidence of illness				
Female relative to male : percent with ARI in the past 2 weeks (6 observations refer to 4 weeks) : children under 5 (27 observations refer to under 4, 8 to under 3)	arid	80	0.8958	0.145
Female relative to male : percent with fever in the past 2 weeks (6 observations refer to 4 weeks) : (27 observations refer to under 4, 6 to under 3)	fevd	71	0.9485	0.075
Female relative to male : percent with diarrhea in the past 2 weeks (1 observation refers to 1 week, 1 to 4 weeks) : children under 5 (27 observations refer to under 4, 8 to under 3)	diad	89	0.9266	0.132
Consultation and no treatment of illness				
Female relative to male : percent with ARI who were taken for consultation (usually includes hospital, health center, clinic, doctor, or other health professional)	aritd	69	0.9528	0.106
Female relative to male : percent with fever who were taken for consultation	fevtd	52	0.9436	0.076
Female relative to male : percent with diarrhea who were taken for consultation	diatd	77	0.9702	0.17
Female relative to male : percent with ARI who received no treatment	arind	55	1.1588	0.467
Female relative to male : percent with fever who received no treatment	fevnd	53	1.149	0.372
Female relative to male : percent with fever or ARI who received no treatment (this is a constructed variable, see text)	f_and	60	1.1547	0.316
Female relative to male : percent with diarrhea who received no treatment	diand	70	1.1548	0.381
Anthropometrics				
Female relative to male : percent whose weight-for-age is below 3 standard deviations of the reference population	wfa3sdd	75	0.9824	0.208
Female relative to male : percent whose weight-for-age is below 2 standard deviations of the reference population	wfa2sdd	79	0.9765	0.113
Female relative to male : percent whose height-for-age is below 3 standard deviations of the reference population	hfa3sdd	70	1.0289	0.448
Female relative to male : percent whose height-for-age is below 2 standard deviations of the reference population	hfa2sdd	74	0.948	0.073
Female relative to male : percent whose weight-for-height is below 3 standard deviations of the reference population	wfh3sdd	68	0.7911	0.352
Female relative to male : percent whose weight-for-height is below 2 standard deviations of the reference population	wfh2sdd	74	0.8377	0.206

Table A1-2:
Data availability : cell is marked with an -x- if at least one of the variables in the category is available.

	Year of survey	Number of women	Marriage and Fertility	Education	Infant / Child mortality	Vaccinations	Incidence of illness	Consultation / No treatment of illness	Anthropometrics
South Asia									
Bangladesh	1993/94	9640	x	x	x	x	x	x	
India	1992/93	89777	x	x	x	x	x	x	x
Sri Lanka	1987	5865	x		x		x	x	x
Nepal	1987	1623							
Pakistan	1990/91	6611	x	x	x	x	x	x	x
Non-South Asian countries									
Burundi	1987	3970	x		x		x	x	x
Burkina Faso	1992/93	6354	x	x	x	x	x	x	x
Bolivia	1989	7923	x		x		x	x	x
Bolivia	1993/94	8603	x	x	x	x	x	x	x
Brazil	1986	5892							
Botswana	1988	4368	x		x	x	x	x	
Central African Rep.	1994/95	6000	x	x	x	x	x	x	x
Cote d'Ivoire	1994	8099	x	x	x	x	x	x	x
Cameroon	1991	3871	x	x	x	x	x	x	x
Colombia	1986	5329	x		x				x
Colombia	1990	8644	x	x	x	x	x	x	
Colombia	1995	11140	x	x	x	x	x	x	x
Dominican Rep.	1986	7649	x		x		x		x
Dominican Rep.	1991	7320	x	x	x	x	x	x	x
Ecuador	1987	4713	x		x				
Egypt	1988/89	8911	x		x	x	x	x	x
Egypt	1992	9864	x	x	x	x	x	x	x
Egypt	1995	14779	x	x	x	x	x	x	x
Ghana	1988	4488	x		x	x	x	x	x
Ghana	1993	4562	x	x	x	x	x	x	x
Guatemala	1987	5160	x		x		x	x	x
Guatemala	1995	12403	x	x	x	x	x	x	x
Haiti	1994/95	5709	x	x	x	x	x	x	x
Indonesia	1987	11884	x		x				
Indonesia	1991	22909	x	x	x	x	x	x	
Indonesia	1994	28168	x	x	x	x	x	x	
Jordan	1990	6461	x	x	x	x	x	x	x
Kazakstan	1995	3771	x		x		x		x
Kenya	1989	7150	x		x	x	x	x	
Kenya	1993	7540	x	x	x	x	x	x	x

Continued...

Table A1-2 continued:
Data availability : cell is marked with an -x- if at least one of the variables in the category is available.

Liberia	1986	5239	x		x	x	x	x	
Morocco	1987	5982	x		x	x	x	x	x
Morocco	1992	9256	x	x	x	x	x	x	x
Madagascar	1992	6260	x	x	x	x	x	x	x
Mexico	1987	9310	x		x		x	x	
Mali	1987	3200	x		x		x	x	x
Mali	1995/96	9000	x	x	x	x	x	x	x
Malawi	1992	4850	x	x	x	x	x	x	x
Namibia	1992	5421	x	x	x	x	x	x	x
Brazil (NE)	1991	6222	x	x	x	x	x	x	
Niger	1992	6503	x	x	x	x	x	x	x
Nigeria	1990	8781	x	x	x	x	x	x	x
Ondo State, Nigeria	1986/87	4213	x		x		x	x	x
Peru	1986	4999	x		x				
Peru	1991/92	15882	x	x	x	x	x	x	x
Philippines	1993	15029	x	x	x	x	x	x	
Paraguay	1990	5827	x	x	x	x	x	x	x
Rwanda	1992	6551	x	x	x	x	x	x	x
Sudan (Northern)	1989/90	5860	x		x	x	x	x	
Senegal	1986	4415	x		x		x	x	x
Senegal	1992/93	6310	x	x	x	x	x	x	x
El Salvador	1985	5207	x						
Togo	1988	3360	x		x		x	x	x
Thailand	1987	6775	x		x		x	x	x
Trinidad/Tobago	1987	3806	x		x			x	x
Tunisia	1988	4184	x		x	x	x	x	x
Turkey	1993	6519	x	x	x	x	x	x	x
Tanzania	1991/92	9238	x	x	x	x	x	x	x
Uganda	1988/89	4730							
Uganda	1995	7070	x	x	x	x	x	x	x
Yemen	1991/92	5687	x	x	x	x	x	x	
Zambia	1992	7060	x	x	x	x	x	x	x
Zimbabwe	1988/89	4201	x		x	x	x	x	x
Zimbabwe	1994	6128	x	x	x	x	x	x	x

Continued...

Table A1-2 continued:
Data availability : cell is marked with an -x- if at lesat one of the variables in the category is available.

	Year of survey	Number of women	Marriage and Fertility	Educa-tion	Infant / Child mortality	Vaccina-tions	Incidence of illness	Consulta-tion / No treatment of illness	Anthrop-ometrics
Pakistan									
Baluchistan	1990/91	941	x	x	x	x	x	x	x
NWFP	1990/91	1665	x	x	x	x	x	x	x
Punjab	1990/91	2207	x	x	x	x	x	x	x
Sindh	1990/91	1798	x	x	x	x	x	x	x
India									
Andhra Pradesh	1992/3	4276	x	x	x	x	x	x	x
Arunachal Pradesh	1992	882	x	x			x		x
Assam	1992/93	3006	x	x	x	x	x	x	x
Bihar	1993	2067	x	x	x	x	x	x	x
Delhi	1993	3457	x	x	x	x	x	x	x
Goa	1992/93	3141	x	x	x	x	x	x	x
Gujarat	1993	3832	x	x	x	x	x	x	x
Himachal Pradesh	1992	2962	x	x	x	x	x	x	x
Haryana	1993	2846	x	x	x	x	x	x	x
Jammu region of J&K	1993	2766	x	x	x	x	x	x	x
Karnataka	1992/93	4413	x	x	x	x	x	x	x
Kerala	1992/93	4332	x	x	x	x	x	x	x
Madhya Pradesh	1992	4283	x	x	x	x	x	x	x
Meghalaya	1992/93	1137	x	x			x		x
Manipur	1993	953	x	x			x		x
Maharashtra	1992/93	4106	x	x	x	x	x	x	x
Mizoram	1993	1045	x	x			x		x
Nagaland	1993	1149	x	x			x		x
Orissa	1993	4257	x	x	x	x	x	x	x
Punjab	1993	2995	x	x	x	x	x	x	x
Rajasthan	1992/93	5211	x	x	x	x	x	x	x
Tamil Nadu	1992	3948	x	x	x	x	x	x	x
Tripura	1993	1100	x	x			x		x
Uttar Pradesh	1992/93	8722	x	x	x	x	x	x	x
West Bengal	1992	1036	x	x	x	x	x	x	x

Appendix 2:

Table A2-1

mrtnnd : Female/Male : neonatal mortality

	Mean	S.D.	N	Maximum	P75	Median	P25	Minimum
Pakistan	0.70	0.19	4	0.87	0.82	0.75	0.58	0.43
India	0.83	0.10	19	0.99	0.93	0.82	0.76	0.62
Sth Asia	0.79	0.04	4	0.84	0.81	0.78	0.77	0.77
R.O.W.	0.80	0.12	43	1.05	0.87	0.78	0.75	0.54

mrtpnnd : Female/Male : post-neonatal mortality

	Mean	S.D.	N	Maximum	P75	Median	P25	Minimum
Pakistan	1.02	0.20	4	1.20	1.19	1.02	0.84	0.82
India	1.13	0.22	19	1.59	1.24	1.14	0.96	0.68
Sth Asia	1.00	0.10	4	1.13	1.08	0.98	0.93	0.92
R.O.W.	0.93	0.14	42	1.40	0.99	0.94	0.84	0.69

mrt1q0d : Female/Male : infant mortality

	Mean	S.D.	N	Maximum	P75	Median	P25	Minimum
Pakistan	0.80	0.15	4	1.00	0.90	0.79	0.71	0.63
India	0.93	0.12	19	1.14	1.07	0.91	0.83	0.77
Sth Asia	0.82	0.12	5	0.95	0.87	0.84	0.82	0.63
R.O.W.	0.86	0.09	64	1.16	0.90	0.86	0.81	0.66

mrt4q1d : Female/Male : child mortality

	Mean	S.D.	N	Maximum	P75	Median	P25	Minimum
Pakistan	1.49	0.54	4	2.07	1.93	1.52	1.06	0.86
India	1.43	0.35	19	2.35	1.63	1.44	1.22	0.80
Sth Asia	1.33	0.25	5	1.66	1.43	1.33	1.24	0.99
R.O.W.	1.00	0.17	61	1.47	1.10	1.01	0.91	0.47

mrt5q0d : Female/Male : under-five mortality

	Mean	S.D.	N	Maximum	P75	Median	P25	Minimum
Pakistan	1.00	0.15	4	1.17	1.11	1.02	0.90	0.80
India	1.04	0.15	19	1.32	1.15	1.04	0.94	0.79
Sth Asia	0.94	0.14	5	1.06	1.01	0.98	0.95	0.70
R.O.W.	0.91	0.08	63	1.15	0.95	0.92	0.86	0.69

enr1d : Female/Male : percent hh population in school : age group 6-10

	Mean	S.D.	N	Maximum	P75	Median	P25	Minimum
Pakistan	0.60	0.17	4	0.75	0.74	0.62	0.45	0.40
India	0.89	0.11	25	1.04	0.96	0.92	0.84	0.59
Sth Asia	0.82	0.11	4	0.97	0.89	0.79	0.74	0.72
R.O.W.	0.92	0.14	39	1.14	1.02	0.97	0.87	0.48

enr2d : Female/Male : percent hh population in school : age group 11-14

	Mean	S.D.	N	Maximum	P75	Median	P25	Minimum
Pakistan	0.52	0.19	4	0.70	0.68	0.52	0.36	0.34
India	0.83	0.14	25	1.01	0.92	0.86	0.77	0.49
Sth Asia	0.74	0.13	4	0.93	0.83	0.70	0.65	0.64
R.O.W.	0.85	0.19	39	1.10	0.98	0.90	0.71	0.33

Cont...

vacalld : Female/Male : percent with all vaccinations

	Mean	S.D.	N	Maximun	P75	Median	P25	Minimum
Pakistan	0.77	0.12	4	0.93	0.85	0.74	0.68	0.67
India	0.91	0.13	19	1.15	1.01	0.91	0.79	0.70
Sth Asia	0.87	0.06	4	0.93	0.91	0.87	0.83	0.80
R.O.W.	1.01	0.09	48	1.32	1.04	1.01	0.96	0.84

vacnond : Female/Male : percent with no vaccinations

	Mean	S.D.	N	Maximun	P75	Median	P25	Minimum
Pakistan	1.12	0.20	4	1.32	1.27	1.13	0.96	0.88
India	1.33	0.65	19	3.38	1.26	1.16	1.01	0.68
Sth Asia	1.18	0.25	4	1.48	1.35	1.19	1.02	0.87
R.O.W.	1.07	0.41	38	2.75	1.22	1.06	0.84	0.25

arid : Female/Male : percent with ari

	Mean	S.D.	N	Maximun	P75	Median	P25	Minimum
Pakistan	0.90	0.23	4	1.06	1.06	0.99	0.74	0.57
India	0.81	0.18	25	1.15	0.92	0.80	0.73	0.46
Sth Asia	0.91	0.11	4	1.03	1.00	0.90	0.81	0.80
R.O.W.	0.94	0.09	51	1.16	1.00	0.95	0.90	0.50

fevd : Female/Male : percent with fever

	Mean	S.D.	N	Maximun	P75	Median	P25	Minimum
Pakistan	1.00	0.02	4	1.02	1.02	1.00	0.99	0.98
India	0.91	0.08	25	1.06	0.96	0.91	0.89	0.74
Sth Asia	0.96	0.04	3	0.99	0.99	0.98	0.92	0.92
R.O.W.	0.97	0.07	43	1.17	1.00	0.97	0.94	0.72

diad : Female/Male : percent with diarrhea

	Mean	S.D.	N	Maximun	P75	Median	P25	Minimum
Pakistan	1.01	0.13	4	1.21	1.08	0.95	0.94	0.93
India	0.92	0.22	25	1.54	0.99	0.88	0.80	0.55
Sth Asia	0.94	0.09	5	1.08	0.95	0.94	0.91	0.83
R.O.W.	0.92	0.07	59	1.09	0.96	0.92	0.87	0.73

aritd : Female/Male : percent w/ ari : medical consultation

	Mean	S.D.	N	Maximun	P75	Median	P25	Minimum
Pakistan	0.99	0.11	4	1.15	1.08	0.97	0.91	0.89
India	0.91	0.11	17	1.11	0.99	0.90	0.82	0.72
Sth Asia	0.92	0.08	4	1.00	0.98	0.91	0.85	0.84
R.O.W.	0.97	0.10	48	1.16	1.05	0.97	0.90	0.69

fevtd : Female/Male : percent w/ fev : medical consultation

	Mean	S.D.	N	Maximun	P75	Median	P25	Minimum
Pakistan	0.97	0.08	4	1.08	1.03	0.95	0.91	0.90
India	0.91	0.07	19	1.04	0.96	0.93	0.84	0.76
Sth Asia	0.92	0.03	2	0.94	0.94	0.92	0.90	0.90
R.O.W.	0.96	0.08	27	1.12	1.02	0.98	0.90	0.82

diatd : Female/Male:percent w/ dia : medical consultation

	Mean	S.D.	N	Maximun	P75	Median	P25	Minimum
Pakistan	0.98	0.56	4	1.65	1.32	1.00	0.64	0.27
India	0.95	0.08	18	1.06	1.01	0.95	0.88	0.84
Sth Asia	1.01	0.15	5	1.24	1.06	0.94	0.91	0.88
R.O.W.	0.98	0.14	54	1.40	1.06	0.99	0.90	0.57

arind : Female/Male : percent w/ ari : no treatment

	Mean	S.D.	N	Maximun	P75	Median	P25	Minimum
Pakistan	1.45	0.84	4	2.60	2.06	1.27	0.84	0.66
India	1.23	0.50	16	1.96	1.63	1.29	0.76	0.43
Sth Asia	1.16	0.18	3	1.29	1.29	1.23	0.95	0.95
R.O.W.	1.09	0.41	32	2.69	1.19	1.03	0.81	0.58

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fevnd : Female/Male:percent w/ fev : no treatment

	Mean	S.D.	N	Maximum	P75	Median	P25	Minimum
Pakistan	1.18	0.32	4	1.42	1.38	1.28	0.97	0.71
India	1.36	0.36	19	1.92	1.69	1.23	1.17	0.71
Sth Asia	1.19	0.06	2	1.24	1.24	1.19	1.15	1.15
R.O.W.	1.00	0.33	28	1.51	1.19	1.05	0.84	0.14

f_and : Female/Male : percent fev/ari : no treatment (filled)

	Mean	S.D.	N	Maximum	P75	Median	P25	Minimum
Pakistan	1.31	0.55	4	2.01	1.69	1.28	0.93	0.68
India	1.30	0.29	19	1.79	1.45	1.34	1.19	0.62
Sth Asia	1.17	0.11	3	1.27	1.27	1.19	1.05	1.05
R.O.W.	1.06	0.29	34	2.04	1.16	1.02	0.88	0.57

diand : Female/Male : percent w/ dia : no treatment

	Mean	S.D.	N	Maximum	P75	Median	P25	Minimum
Pakistan	1.50	1.21	4	3.26	2.29	1.05	0.70	0.63
India	1.31	0.34	18	1.93	1.59	1.34	1.10	0.78
Sth Asia	1.12	0.22	5	1.45	1.18	1.13	0.95	0.89
R.O.W.	1.05	0.22	47	2.00	1.14	1.02	0.91	0.60

wfa2sdd : Female/Male : percent weight-for-age below 2 SD of reference median

	Mean	S.D.	N	Maximum	P75	Median	P25	Minimum
Pakistan	0.95	0.07	4	1.03	1.00	0.94	0.90	0.88
India	1.01	0.10	25	1.19	1.08	1.00	0.93	0.82
Sth Asia	1.01	0.03	4	1.05	1.04	1.01	0.99	0.98
R.O.W.	0.97	0.13	50	1.24	1.04	0.96	0.89	0.64

hfa2sdd : Female/Male : percent height-for-age below 2 SD of reference median

	Mean	S.D.	N	Maximum	P75	Median	P25	Minimum
Pakistan	0.94	0.06	4	1.00	0.98	0.94	0.89	0.86
India	0.98	0.06	20	1.12	1.04	0.98	0.94	0.89
Sth Asia	1.03	0.07	4	1.09	1.08	1.03	0.97	0.96
R.O.W.	0.93	0.08	50	1.11	0.98	0.94	0.88	0.70

wfh2sdd : Female/Male : percent weight-for-height below 2 SD of reference median

	Mean	S.D.	N	Maximum	P75	Median	P25	Minimum
Pakistan	0.83	0.24	4	1.08	1.02	0.84	0.64	0.56
India	0.84	0.18	20	1.22	0.97	0.86	0.69	0.57
Sth Asia	0.89	0.13	4	1.09	0.97	0.84	0.82	0.80
R.O.W.	0.84	0.22	50	1.50	0.93	0.83	0.75	0.20

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w1519nm : Percent never married: women 15-19

	Mean	S.D.	N	Maximun	P75	Median	P25	Minimum
Pakistan	71.55	6.79	4	75.40	75.35	39.55	67.75	61.40
India	71.57	15.55	25	96.90	82.00	25.90	61.30	36.00
Sth Asia	67.00	17.02	5	92.70	75.10	18.50	56.00	50.50
R.O.W.	76.77	13.69	64	95.60	85.95	35.15	71.30	24.60

w2024nm : Percent never married: women 20-24

	Mean	S.D.	N	Maximun	P75	Median	P25	Minimum
Pakistan	34.80	10.07	4	40.40	40.00	39.55	29.60	19.70
India	28.59	15.71	25	71.00	35.30	25.90	18.10	8.60
Sth Asia	28.44	19.26	5	57.10	39.40	18.50	14.80	12.40
R.O.W.	35.25	14.79	64	69.70	44.15	35.15	24.70	2.00

w2049mm : Median age 1st marriage: women 20-49

	Mean	S.D.	N	Maximun	P75	Median	P25	Minimum
Pakistan		0.00	0					
India	17.12	1.50	20	19.50	18.30	17.20	15.85	14.70
Sth Asia	16.52	1.84	4	18.90	17.65	16.40	15.40	14.40
R.O.W.	18.02	1.31	32	20.80	18.95	18.30	17.25	15.10

w2549mm : Median age 1st marriage: women 25-49

	Mean	S.D.	N	Maximun	P75	Median	P25	Minimum
Pakistan	18.27	1.05	4	19.30	19.15	18.35	17.40	17.10
India	17.57	2.06	25	21.70	19.00	17.70	16.00	14.50
Sth Asia	16.33	1.73	4	18.60	17.40	16.15	15.25	14.40
R.O.W.	18.96	1.81	53	24.80	20.50	18.80	17.80	15.10

w1519nb : Percent with no birth: women 15-19

	Mean	S.D.	N	Maximun	P75	Median	P25	Minimum
Pakistan	87.10	1.64	4	88.30	88.15	87.70	86.05	84.70
India	86.20	7.61	25	98.30	92.40	86.00	79.30	72.10
Sth Asia	83.90	8.83	5	96.40	87.80	81.40	81.30	72.60
R.O.W.	83.34	9.16	64	98.00	91.00	85.35	76.85	55.50

w2024nb : Percent with no birth: women 20-24

	Mean	S.D.	N	Maximun	P75	Median	P25	Minimum
Pakistan	48.62	10.73	4	56.60	54.90	52.55	42.35	32.80
India	42.70	14.79	25	80.90	50.70	42.40	31.20	22.40
Sth Asia	40.80	19.09	5	67.00	54.30	33.50	26.90	22.30
R.O.W.	39.48	14.87	64	71.30	50.80	42.05	27.05	15.00

w2049mb : Median age 1st birth: women 20-49

	Mean	S.D.	N	Maximun	P75	Median	P25	Minimum
Pakistan		0.00	0					
India	19.24	0.57	11	20.00	19.80	19.20	18.90	18.00
Sth Asia	19.03	1.16	3	19.80	19.80	19.60	17.70	17.70
R.O.W.	19.14	0.45	18	19.70	19.40	19.25	18.90	18.00

w2549mb : Median age 1st birth: women 25-49

	Mean	S.D.	N	Maximun	P75	Median	P25	Minimum
Pakistan	20.98	0.62	4	21.60	21.50	21.00	20.45	20.30
India	19.83	1.32	19	23.70	20.20	19.70	18.90	17.90
Sth Asia	20.40	2.43	5	24.00	21.30	19.80	19.40	17.50
R.O.W.	20.60	1.22	55	23.10	21.50	20.80	19.60	18.50

Appendix 3:

Gender disparity in South Asia: A note on additional regression results[1]

Deon Filmer, Elizabeth M. King, Lant Pritchett

In the course of carrying out the work for "Gender disparity in South Asia: Comparisons across and within countries[2]" we assembled a database which can be used to investigate the correlates of gender disparities. In the paper we reported that income (or a proxy thereof) is not a good predictor of the degree of gender disparity, within or outside of South Asia. This note summarizes the results of introducing other variables into the regression, and is a companion to the earlier paper.

The basic regression results, reported in Table 1, restate our earlier results: Gender disparity is not explained by a proxy for income. Controlling for income, a significant difference in the means is found for the South Asian areas (at least for child mortality and the proportion of ARI and fever episodes that resulted in no treatment). Moreover, for these same outcomes, a fair amount of the cross-area variation is explained by the South Asia dummy variable alone.

Can we identify the characteristics which explain the effect of the South Asia dummy variable and the variation within South Asia? As discussed in the paper, many of the theories of the low level of investment in girls rest on the economic role of women, particularly in

[1] The findings, interpretations, and conclusions expressed in this note are entirely those of the authors. They do not necessarily represent the views of the World Bank, its Executive Directors, or the countries they represent. The note should not be cited without the permission of the authors.

[2] "Gender disparity in South Asia: Comparisons across and within countries," Deon Filmer, Elizabeth M. King, Lant Pritchett, DECRG mimeo, The World Bank.

agricultural production. Table 2 reports the results of the regression which includes a set of observable variables related to religion and production in rural and agricultural areas (see Table 3 for summary statistics and Annex 2 for the sources of these data). About 45 percent of the variation in mortality and in enrollment disparities within South Asia is accounted for by this set of variables. Adding these variables, however, does not eliminate the significance of the dummy variable for South Asia in the all-countries regression, implying that there is still something fixed and common to at least certain areas of South Asian countries which accounts for the higher gender disparities in that region.

The percent of the population that is Muslim has a significantly negative effect on the school enrollment of girls relative to that of boys. This is the case both across states, provinces, and countries within South Asia, as well as across countries outside of that region. However, this variable does not appear to affect the gender differential in child mortality or in the treatment of fever and ARI. Note however that the percent Muslim does have a significantly positive effect on the *level* of female mortality, and a strong negative effect on the percent of women who receive treatment in countries outside of South Asia (see Annex Table 1).

Controlling for income and the rural population density, the share of the labor force employed in agriculture may serve as an indicator of the level of modernization of the society. With this interpretation, one might expect a relatively more agricultural economy to have larger gender disparities. In fact, the two significant coefficients suggest otherwise. Likewise, a larger rural population per area of land implies higher enrollment rates for girls relative to boys in the all-countries regression.

One of the most frequently mentioned hypotheses regarding gender disparities in South Asia involves the difference between wheat and rice production. The hypothesis is that women play a much smaller part in the production of wheat and therefore are less "valuable" to households, or have less bargaining power in households, in areas where wheat is the predominant crop. Our results are consistent with this hypothesis. The share of agricultural land that is harvested with wheat has a significantly positive relationship with the mortality differential, but does not appear to be related to enrollment or treatment. To the extent that wheat may be correlated with unobserved factors which are not controlled for by the other included variables, the results do not allow the inference of a causal link between wheat production and gender disparity. However, including a dummy variable for Indian states and for Pakistani provinces in the South Asian regression does not qualitatively alter the results (see Annex Table 2 for those results).

In sum, a handful of variables besides income help predict the variation in gender disparity in child mortality and education in South Asia. From the all-countries regression, however, it appears that there are other strong South Asia fixed effects that are not captured by these variables. How much more can be done to unbundle these effects is severely limited by the availability of additional comparable data at the country and state levels, and the remaining degrees of freedom.

Table 1: Basic regression on the gender disparity in mortality, enrollment, and treatment

Variable	Child Mortality (4q1)			Enrolled in school			No treatment for fever or ARI		
	All*	Non South Asia	South* Asia	All*	Non South Asia	South* Asia	All*	Non South Asia	South* Asia
Income (ln)	0.031 (0.68)	0.022 (0.72)	0.117 (0.51)	0.056 (1.41)	0.043 (1.01)	0.133 (1.26)	0.052 (0.65)	0.064 (0.78)	-0.010 (-0.05)
Dummy for Sth Asia	0.405 (7.04)	. (.)	. (.)	-0.067 (-1.58)	. (.)	. (.)	0.230 (2.74)	. (.)	. (.)
Cons	0.785 (2.39)	0.847 (3.79)	0.568 (0.34)	0.449 (1.56)	0.543 (1.76)	-0.174 (-0.23)	0.690 (1.23)	0.601 (1.04)	1.364 (0.89)
R-sq	.3891	.0096	.0107	.0639	.0292	.0518	.1491	.0207	.0001
A R-sq	.3736	-.0087	-.0305	.0346	.0006	.0191	.1164	-.0131	-.0454
Num. Obs.	82	56	26	67	36	31	55	31	24

t-statistics in parentheses
* Includes regional subgroupings within India and Pakistan but excludes observations at the national level for those countries.

Table 2: Regression on the gender disparity in mortality, enrollment, and treatment

Variable	Child Mortality (4q1)			Enrolled in school			No treatment for fever or ARI		
	All*	Non South Asia	South* Asia	All*	Non South Asia	South* Asia	All*	Non South Asia	South* Asia
Income (ln)	-0.070 (-1.34)	-0.021 (-0.30)	-0.122 (-0.43)	0.117 (2.83)	0.114 (1.46)	0.203 (1.67)	0.006 (0.06)	-0.025 (-0.12)	-0.128 (-0.36)
Dummy for Sth Asia	0.240 (3.31)	. (.)	. (.)	-0.156 (-3.22)	. (.)	. (.)	0.279 (2.17)	. (.)	. (.)
Rur. Pop. Ag. land	-0.013 (-1.09)	0.010 (0.57)	-0.039 (-1.38)	0.021 (2.43)	0.026 (1.35)	0.007 (0.58)	-0.012 (-0.57)	0.080 (1.49)	-0.030 (-0.83)
Labor frce in agric	-0.171 (-1.31)	-0.031 (-0.15)	-0.077 (-0.25)	0.177 (2.01)	0.316 (1.55)	0.148 (1.20)	-0.228 (-0.98)	-0.801 (-1.56)	-0.043 (-0.11)
Share Muslim	0.021 (0.34)	-0.004 (-0.06)	0.540 (1.18)	-0.289 (-5.72)	-0.434 (-5.47)	0.098 (0.49)	0.016 (0.12)	0.240 (1.12)	-0.002 (0.00)
Share Ag Wheat	1.280 (5.84)	1.013 (1.76)	1.409 (3.24)	-0.127 (-0.84)	0.561 (0.88)	-0.145 (-0.77)	0.197 (0.53)	-2.410 (-1.30)	0.405 (0.74)
Share Ag Rice	0.159 (1.11)	-0.036 (-0.12)	0.053 (0.17)	0.077 (0.80)	1.016 (2.28)	0.048 (0.40)	-0.236 (-0.97)	-1.614 (-1.16)	-0.345 (-0.88)
Share Ag Maize	0.060 (0.19)	0.102 (0.29)	-1.323 (-1.01)	-0.028 (-0.12)	-0.667 (-1.97)	-0.104 (-0.20)	0.507 (0.86)	0.519 (0.50)	0.121 (0.06)
Dummy for Pakistan	. (.)	. (.)	-0.422 (-0.81)	. (.)	. (.)	-0.262 (-1.28)	. (.)	. (.)	-0.481 (-0.74)
Dummy for India	. (.)	. (.)	0.118 (0.46)	. (.)	. (.)	0.141 (1.00)	. (.)	. (.)	-0.355 (-0.42)
Cons	1.581 (3.68)	1.131 (1.85)	2.176 (1.02)	-0.027 (-0.08)	-0.058 (-0.09)	-0.879 (-0.97)	1.146 (1.35)	1.648 (0.90)	2.750 (0.98)
R-sq	.6227	.2591	.5099	.4639	.6105	.5074	.1982	.2461	.1762
A R-sq	.5796	.1487	.1949	.3859	.5095	.2741	.0490	.0063	-.4416
Num. Obs.	79	55	24	64	35	29	52	30	22

t-statistics in parentheses
* Includes regional subgroupings within India and Pakistan but excludes observations at the national level for those countries.

Table 3: Summary statistics: Mean (standard deviation)			
	All*	Non South Asia	South Asia*
Child mortality:			
gender differential	1.137 (.312)	1.005 (.157)	1.438 (.368)
female level	49.12 (40.2)	55.47 (45.4)	33.93 (16.3)
Enrolled in school:			
gender differential	.8162 (.184)	.8485 (.173)	.7773 (.179)
female level	61.23 (21.3)	60.47 (22.4)	62.15 (20.2)
No treatment for Fever or ARI:			
gender differential	1.157 (.326)	1.058 (.285)	1.292 (.337)
female level	18.06 (10.5)	17.83 (11.9)	18.37 (8.49)
Income: natural log	7.230 (.612)	7.240 (.710)	7.213 (.311)
level	1670.5 (1179)	1786.5 (1371)	1425.8 (491.3)
Dummy for South Asia	.3107 (.465)		
Rural pop. per agric. land	2.198 (2.69)	1.208 (1.81)	4.397 (3.04)
Share of labor force in agric.	.5564 (.249)	.5606 (.241)	.5471 (.270)
Share muslim	.2842 (.373)	.2999 (.383)	.2494 (.352)
Share of agric. land: wheat	.0565 (.123)	.0203 (.056)	.1396 (.183)
Share of agric. land: rice	.1288 (.242)	.0321 (.082)	.3434 (.329)
Share of agric. land: maize	.0509 (.073)	.0518 (.076)	.0488 (.068)
Dummy for Pakistan			.1250 (.336)
Dummy for India			.7188 (.457)
Avg years of school of women 15 and over (zero if missing)	2.459 (1.05)	2.632 (1.81)	2.076 (2.48)
Dummy for avg years of school of women 15 and over missing	.0777 (.269)	.1127 (.318)	0
Gini coefficient (zero if missing)	.3305 (.186)	.3754 (.189)	.2308 (.138)
Dummy for Gini coefficient missing	.1942 (.397)	.1690 (.377)	.2500 (.440)
Number of observations (non dependent variables)	103	71	32

* Includes regional subgroupings within India and Pakistan but excludes observations at the national level for those countries.

Annex 1

Annex 1 Table 1: Regression on the female level of mortality, enrollment, and treatment

Variable	Child Mortality (4q1)			Enrolled in school			No treatment for fever or ARI		
	All*	Non South Asia	South* Asia	All*	Non South Asia	South* Asia	All*	Non South Asia	South* Asia
lrgdpch	-46.800	-33.929	-36.055	18.041	9.217	18.016	-6.189	3.198	-6.862
	(-7.01)	(-2.60)	(-3.02)	(3.91)	(1.00)	(1.37)	(-1.98)	(0.42)	(-1.24)
sasia	-22.789	.	.	-5.535	.	.	1.270	.	.
	(-2.33)	(.)	(.)	(-1.03)	(.)	(.)	(0.34)	(.)	(.)
rpoppag	-0.417	2.014	-1.434	2.348	1.513	1.444	0.265	1.935	-0.375
	(-0.27)	(0.63)	(-1.19)	(2.44)	(0.66)	(1.11)	(0.43)	(1.03)	(-0.68)
lfag	11.549	31.602	-2.621	11.591	0.679	20.896	-1.192	21.645	-7.028
	(0.70)	(0.85)	(-0.20)	(1.18)	(0.03)	(1.56)	(-0.18)	(1.21)	(-1.17)
shmusl	18.314	47.465	20.171	-37.518	-55.329	-0.792	13.485	19.872	-5.256
	(2.22)	(3.72)	(1.04)	(-6.67)	(-5.95)	(-0.04)	(3.74)	(2.67)	(-0.35)
swheat	25.702	-231.773	53.327	-17.198	117.224	-19.548	-12.442	-40.549	-14.132
	(0.91)	(-2.18)	(2.88)	(-1.02)	(1.57)	(-0.95)	(-1.18)	(-0.63)	(-1.66)
srice	7.306	-99.172	-1.479	-0.610	109.203	0.017	6.941	-48.701	1.654
	(0.40)	(-1.76)	(-0.11)	(-0.06)	(2.08)	(0.00)	(1.00)	(-1.01)	(0.27)
smaize	-59.917	37.358	-94.532	27.427	-46.825	31.386	-24.923	-0.222	-14.474
	(-1.46)	(0.58)	(-1.70)	(1.08)	(-1.18)	(0.57)	(-1.48)	(-0.01)	(-0.47)
dumpak	.	.	-47.355	.	.	-11.690	.	.	-17.264
	(.)	(.)	(-2.15)	(.)	(.)	(-0.53)	(.)	(.)	(-1.72)
dumind	.	.	-21.520	.	.	25.616	.	.	-24.926
	(.)	(.)	(-2.00)	(.)	(.)	(1.67)	(.)	(.)	(-1.88)
_cons	382.988	270.203	315.717	-67.708	6.301	-101.853	58.588	-25.023	100.176
	(6.98)	(2.38)	(3.52)	(-1.86)	(0.08)	(-1.04)	(2.41)	(-0.40)	(2.29)

t-statistics in parentheses
* Includes regional subgroupings within India and Pakistan but excludes observations at the national level for those countries.

Annex 1 Table 2: Regression on the gender differential in mortality, enrollment, and treatment: Including average years of education of women 15 and over

Variable	Child Mortality (4q1)			Enrolled in school			No treatment for fever or ARI		
	All*	Non South Asia	South* Asia	All*	Non South Asia	South* Asia	All*	Non South Asia	South* Asia
lrgdpch	0.019	-0.044	-0.411	0.027	0.081	0.157	0.192	-0.124	-0.209
	(0.25)	(-0.54)	(-1.18)	(0.52)	(0.92)	(2.11)	(1.26)	(-0.43)	(-0.51)
yrs15	-0.032	-0.003	-0.012	0.030	0.034	0.026	-0.070	-0.046	-0.051
	(-1.63)	(-0.12)	(-0.22)	(2.36)	(1.13)	(1.96)	(-1.78)	(-0.46)	(-0.72)
yrs15m	-0.095	-0.011	.	0.026	0.068	.	-0.141	-0.134	.
	(-1.04)	(-0.14)	(.)	(0.36)	(0.69)	(.)	(-0.80)	(-0.56)	(.)
gini	0.068	0.581	-6.454	0.293	0.340	2.641	-0.157	1.254	-7.598
	(0.18)	(1.69)	(-2.10)	(1.02)	(0.92)	(3.28)	(-0.19)	(1.16)	(-2.02)
ginimis	0.143	0.371	-1.537	0.113	0.094	0.947	-0.109	0.549	-2.331
	(0.85)	(2.30)	(-1.66)	(0.97)	(0.54)	(3.79)	(-0.30)	(1.09)	(-1.96)
sasia	0.232	.	.	-0.124	.	.	0.193	.	.
	(2.82)	(.)	(.)	(-2.27)	(.)	(.)	(1.24)	(.)	(.)
rpoppag	-0.004	0.022	-0.046	0.009	0.042	-0.018	0.023	0.097	0.013
	(-0.25)	(1.16)	(-1.04)	(0.85)	(1.76)	(-1.99)	(0.79)	(1.48)	(0.24)
lfag	-0.152	-0.151	0.035	0.117	0.406	0.018	-0.062	-1.091	0.258
	(-1.11)	(-0.71)	(0.12)	(1.34)	(1.67)	(0.23)	(-0.25)	(-1.83)	(0.69)
shmusl	-0.001	0.023	0.980	-0.222	-0.355	0.209	-0.125	0.194	0.172
	(-0.02)	(0.29)	(2.13)	(-4.09)	(-3.66)	(1.70)	(-0.85)	(0.63)	(0.17)
swheat	1.146	1.120	1.458	0.055	0.346	0.146	-0.108	-1.896	0.190
	(4.90)	(1.97)	(3.21)	(0.35)	(0.50)	(1.23)	(-0.27)	(-0.94)	(0.35)
srice	0.100	0.188	-0.147	0.187	0.656	0.205	-0.530	-0.697	-0.868
	(0.63)	(0.57)	(-0.39)	(1.84)	(1.11)	(2.33)	(-1.85)	(-0.38)	(-1.95)
smaize	-0.032	-0.205	-3.547	0.041	-0.679	0.294	0.597	0.028	-1.815
	(-0.10)	(-0.56)	(-2.42)	(0.18)	(-1.75)	(0.86)	(0.99)	(0.02)	(-0.81)
dumpak	.	.	-0.895	.	.	-0.345	.	.	-0.878
	(.)	(.)	(-1.77)	(.)	(.)	(-2.74)	(.)	(.)	(-1.46)
dumind	.	.	-0.096	.	.	0.123	.	.	-0.633
	(.)	(.)	(-0.38)	(.)	(.)	(1.43)	(.)	(.)	(-0.74)
_cons	0.975	1.080	6.458	0.432	-0.134	-1.383	0.006	2.082	5.922
	(1.78)	(1.73)	(2.02)	(1.10)	(-0.18)	(-2.06)	(0.00)	(1.00)	(1.50)

t-statistics in parentheses

* Includes regional subgroupings within India and Pakistan but excludes observations at the national level for those countries.

Annex 1 Table 3: Regression on the female level of mortality, enrollment, and treatment: Including average years of education of women 15 and over

Variable	Child Mortality (4q1)			Enrolled in school			No treatment for fever or ARI		
	All*	Non South Asia	South* Asia	All*	Non South Asia	South* Asia	All*	Non South Asia	South* Asia
lrgdpch	-40.110	-32.635	-36.768	4.466	0.187	10.396	0.105	3.967	-3.481
	(-4.22)	(-2.05)	(-2.21)	(0.82)	(0.02)	(1.29)	(0.02)	(0.40)	(-0.45)
yrs15	-1.447	1.737	-2.636	4.331	3.714	3.834	-2.103	2.146	-1.279
	(-0.58)	(0.34)	(-1.02)	(3.25)	(1.13)	(2.69)	(-1.90)	(0.62)	(-0.94)
yrs15m	-5.519	3.667	.	-2.567	-4.094	.	0.923	9.933	.
	(-0.47)	(0.23)	(.)	(-0.34)	(-0.38)	(.)	(0.19)	(1.21)	(.)
gini	-7.452	2.496	-111.054	37.165	30.643	227.012	-2.249	-4.391	-27.341
	(-0.16)	(0.04)	(-0.69)	(1.24)	(0.75)	(2.59)	(-0.10)	(-0.12)	(-0.38)
ginimis	16.542	15.907	-16.003	12.891	4.670	83.008	-1.472	-4.387	-11.621
	(0.77)	(0.50)	(-0.34)	(1.06)	(0.24)	(3.05)	(-0.14)	(-0.25)	(-0.51)
sasia	-22.562	.	.	-2.026	.	.	-0.076	.	.
	(-2.07)	(.)	(.)	(-0.36)	(.)	(.)	(-0.02)	(.)	(.)
rpoppag	-0.534	1.869	-0.772	0.511	2.319	-1.731	1.265	2.383	0.606
	(-0.29)	(0.51)	(-0.37)	(0.49)	(0.88)	(-1.72)	(1.57)	(1.05)	(0.59)
lfag	9.390	35.150	2.654	2.776	-0.333	4.564	3.669	29.412	-2.545
	(0.54)	(0.85)	(0.19)	(0.30)	(-0.01)	(0.54)	(0.52)	(1.42)	(-0.36)
shmusl	18.865	49.016	31.473	-27.937	-45.128	12.066	9.241	24.489	-7.768
	(2.02)	(3.17)	(1.39)	(-4.93)	(-4.24)	(0.90)	(2.22)	(2.31)	(-0.40)
swheat	17.549	-211.056	44.523	8.787	108.720	14.406	-22.443	-61.639	-19.692
	(0.58)	(-1.89)	(2.08)	(0.53)	(1.43)	(1.12)	(-1.96)	(-0.88)	(-1.93)
srice	9.612	-95.359	-15.518	14.977	72.712	20.218	-1.314	-81.223	-5.983
	(0.47)	(-1.48)	(-0.86)	(1.41)	(1.12)	(2.11)	(-0.16)	(-1.29)	(-0.71)
smaize	-65.208	23.981	-164.143	34.197	-48.647	74.716	-18.702	10.478	-19.816
	(-1.56)	(0.34)	(-2.15)	(1.45)	(-1.14)	(2.02)	(-1.09)	(0.24)	(-0.47)
dumpak	.	.	-58.413	.	.	-22.191	.	.	-17.659
	(.)	(.)	(-2.44)	(.)	(.)	(-1.62)	(.)	(.)	(-1.55)
dumind	.	.	-26.388	.	.	20.775	.	.	-25.881
	(.)	(.)	(-2.18)	(.)	(.)	(2.21)	(.)	(.)	(-1.60)
_cons	340.377	250.069	364.100	6.841	48.438	-117.312	17.246	-40.488	85.056
	(4.85)	(2.05)	(2.32)	(0.17)	(0.58)	(-1.61)	(0.54)	(-0.56)	(1.13)

t-statistics in parentheses
* Includes regional subgroupings within India and Pakistan but excludes observations at the national level for those countries.

Annex 2: Data sources

Annex 2 Table 1: Source (year of data)			
Variable	Country level	Indian states	Pakistani provinces
Income	PWT56	I ES (1990/91)	PIHS (1990/91)
Percent of population rural	WB SID	I SA (1991)	P AS (1981)
Agricultural land	FAO 1	I SA (1990/91)	P AS (1992/93)
Share of labor force in agriculture	WB SID	I LYB (1991)	P ES (1991/92)
Share muslim		I SA (1981)	
Area harvested with wheat	FAO 2	I SA (1990/91)	P AS (1992/93)
Area harvested with rice	FAO 2	I SA (1990/91)	P AS (1992/93)
Area harvested with maize	FAO 2	I SA (1990/91)	P AS (1992/93)
Average years of schooling of women 15 and over	BL	NFHS (1992/93)	DHS (1990)
Gini coefficient	DS	ODR (1993)	M (1987/88)

PWT56: Penn World Tables Mark 5.6
WB SID: World Bank Social Indicators of Development 1997
FAO 1: FAOSTAT web site "http://apps.fao.org/" as of 9/1/96
FAO 2: FAO statistics as reported in the World Bank's BESD system
BL: Barro-Lee education data
I ES: Economic Survey, Government of India, 1993/94, "converted" to 1985 international dollars
I SA: Statistical Abstract, India 1992
I LYB: Indian Labor Year Book, 1993
NFHS: National Family Health Survey (similar to DHS)
PIHS: Pakistan Integrated Household Survey, 1990/91, "converted" to 1985 international dollars
P ES: Economic Survey, Government of Pakistan, 1993-94
P AS: Agricultural Statistics of Pakistan 1992-93
DHS: Demographic and Health Survey
DS: Deininger and Squire (1996)
ODR: Ozler, Datt, and Ravaillon (1996)
M: Malik (1996) in Lipton and Van der Gaag (eds)

Figure 1A

FEMALE RELATIVE TO MALE CHILD MORTALITY

mrt4q1d

- <=0.886
- 0.887 to 1.062
- 1.063 to 1.448
- >=1.449
- NO DATA

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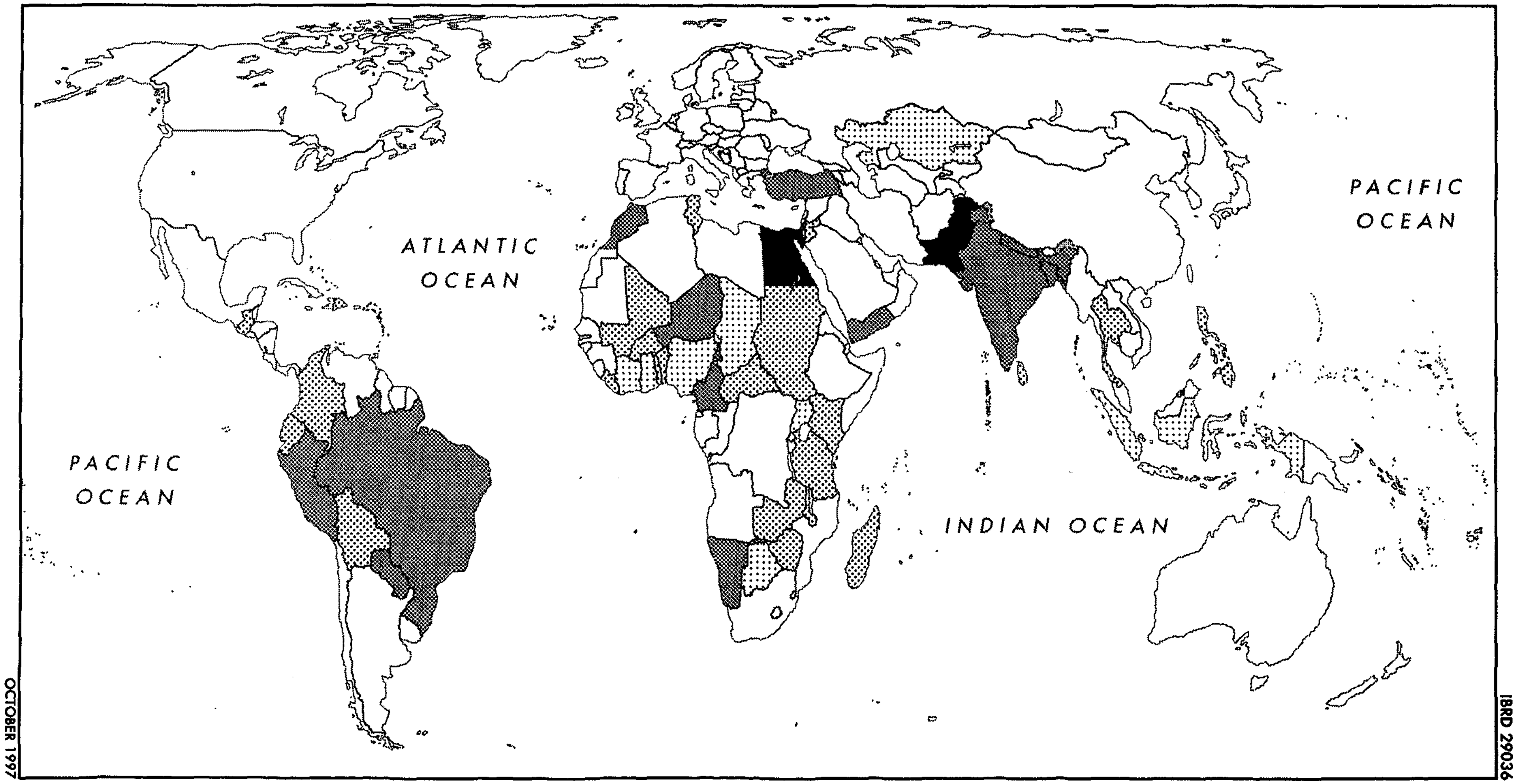


Figure 1B

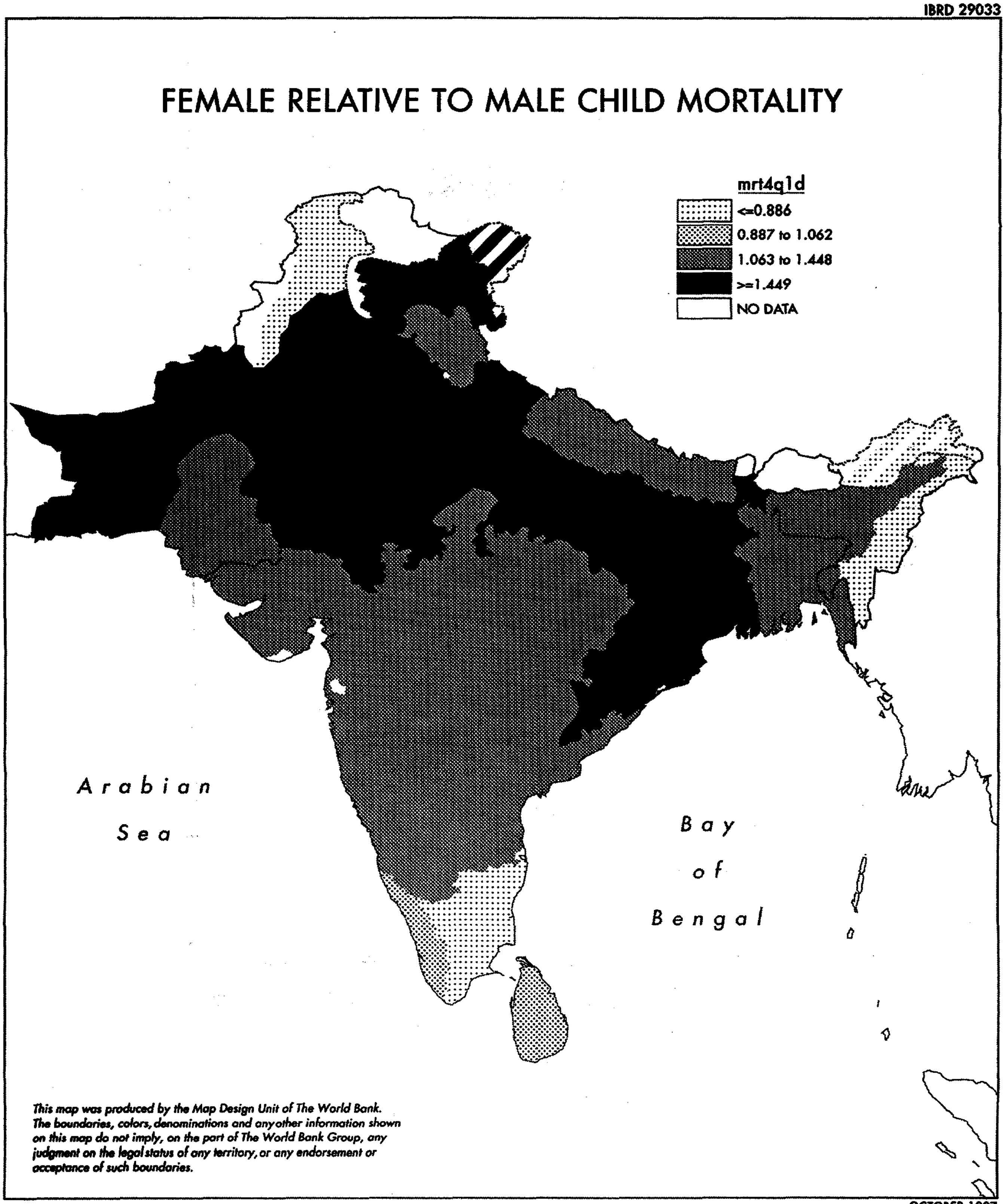
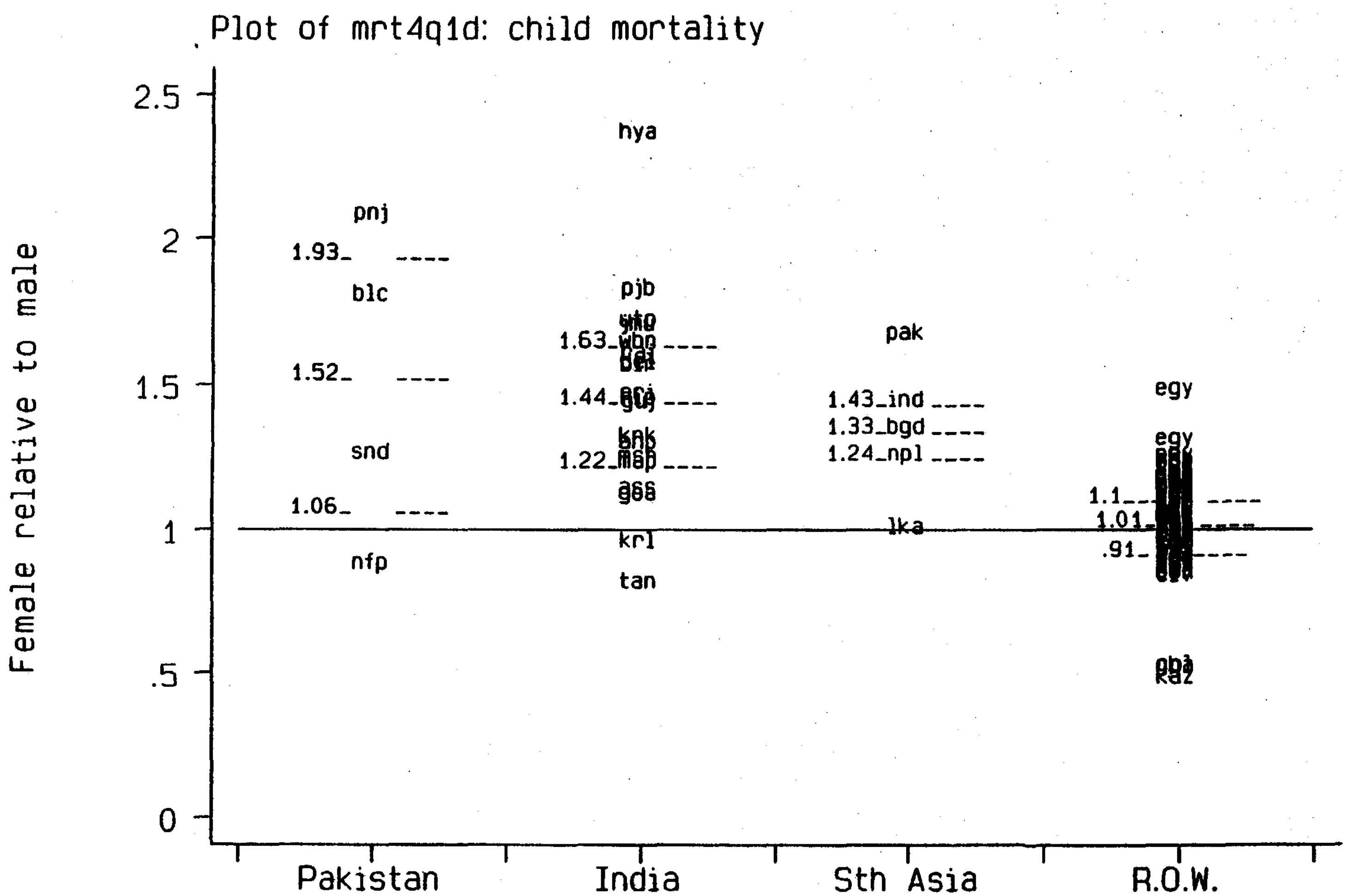
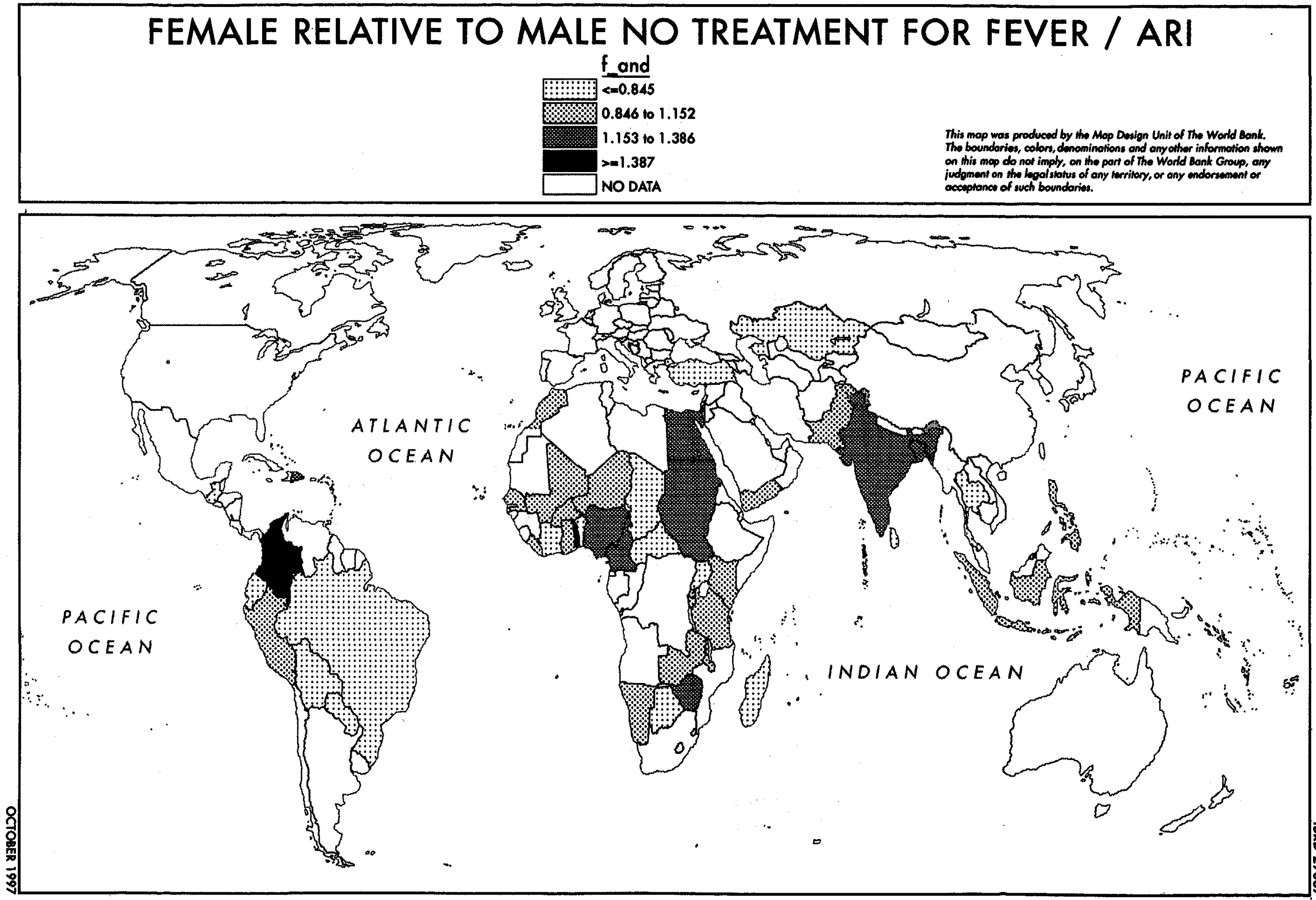

IBRD 29033
FEMALE RELATIVE TO MALE CHILD MORTALITY
mrt4q1d
<=0.886
0.887 to 1.062
1.063 to 1.448
>=1.449
NO DATA
Arabian Sea
Bay of Bengal
This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and anyother information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.
OCTOBER 1997

Figure 1c



Plot of mrt4q1d: child mortality
Female relative to male
2.5
2
1.5
1
.5
0
hya
pnj
1.93
blc
1.52
snd
1.06
nfp
pjb
1.63
wbn
1.44
guj
1.22
mhr
krl
tan
pak
1.43 ind
1.33 bgd
1.24 npl
lka
egy
egy
1.1
1.01
.91
kaz
Pakistan
India
Sth Asia
R.O.W.

Figure 2A



FEMALE RELATIVE TO MALE NO TREATMENT FOR FEVER / ARI
f_and
<=0.845
0.846 to 1.152
1.153 to 1.386
>=1.387
NO DATA
This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and anyother information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.
ATLANTIC OCEAN
PACIFIC OCEAN
PACIFIC OCEAN
INDIAN OCEAN
OCTOBER 1997
IBRD 29037

Figure 2B

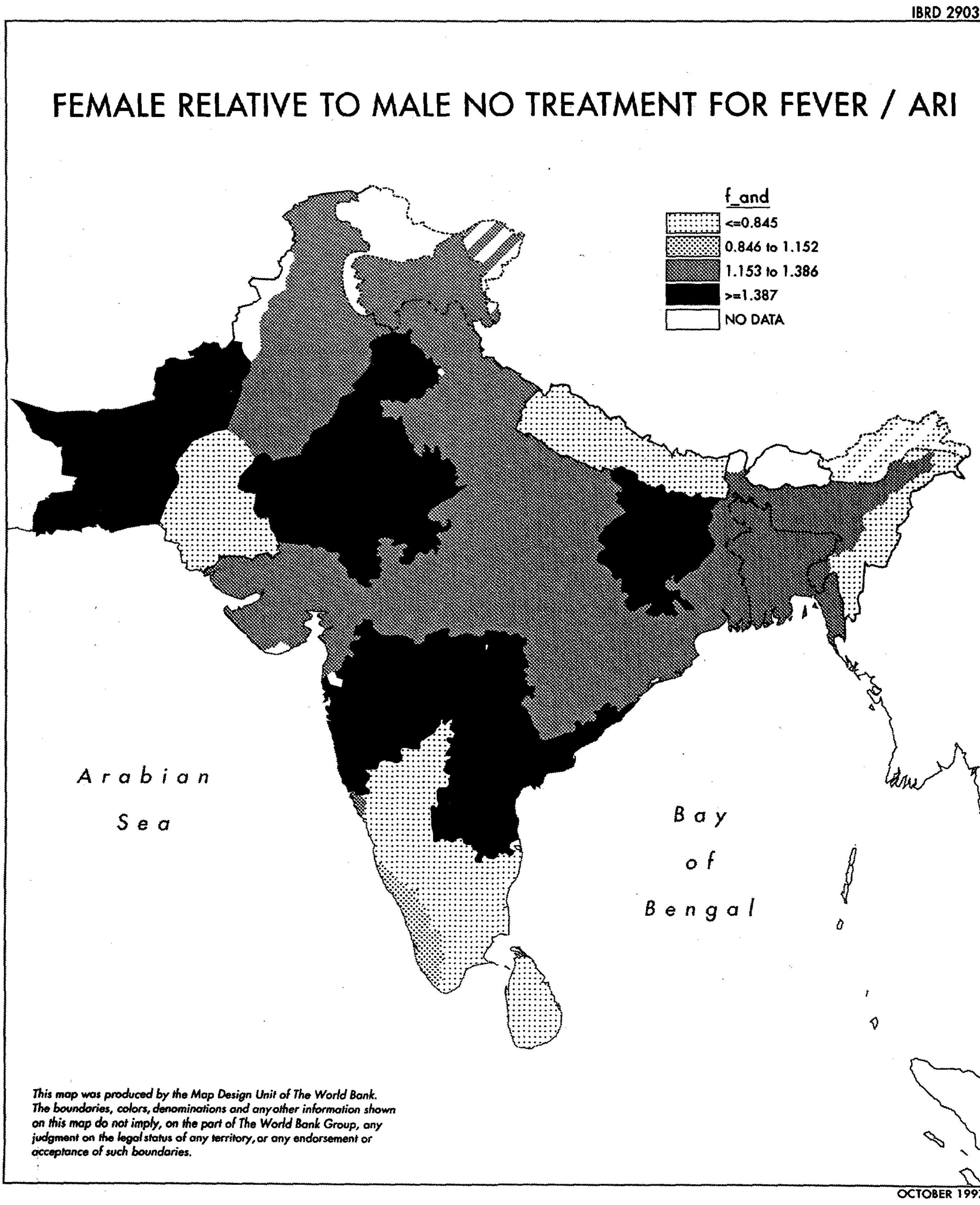

IBRD 29034
FEMALE RELATIVE TO MALE NO TREATMENT FOR FEVER / ARI
f_and
<=0.845
0.846 to 1.152
1.153 to 1.386
>=1.387
NO DATA
Arabian Sea
Bay of Bengal
This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and anyother information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.
OCTOBER 1997

Figure 2c

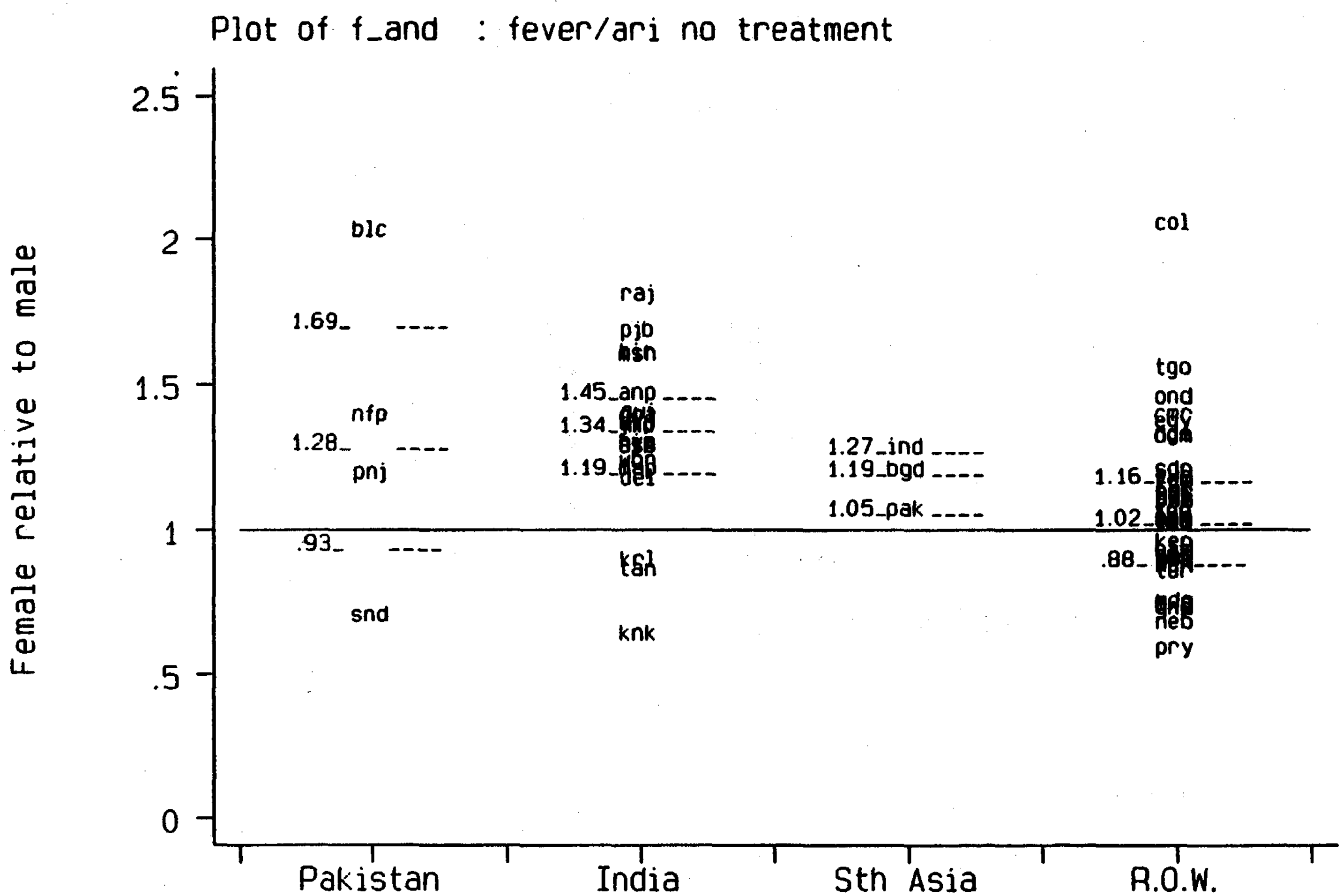

Plot of f_and : fever/ari no treatment
Female relative to male
2.5
2
1.5
1
.5
0
Pakistan
India
Sth Asia
R.O.W.
blc
1.69_
nfp
1.28_
pnj
.93_
snd
raj
pjb
1.45_anp
1.34_
1.19_
knk
1.27_ind
1.19_bgd
1.05_pak
col
tgo
ond
1.16_
1.02_
.88_
neb
pry

Figure 3A

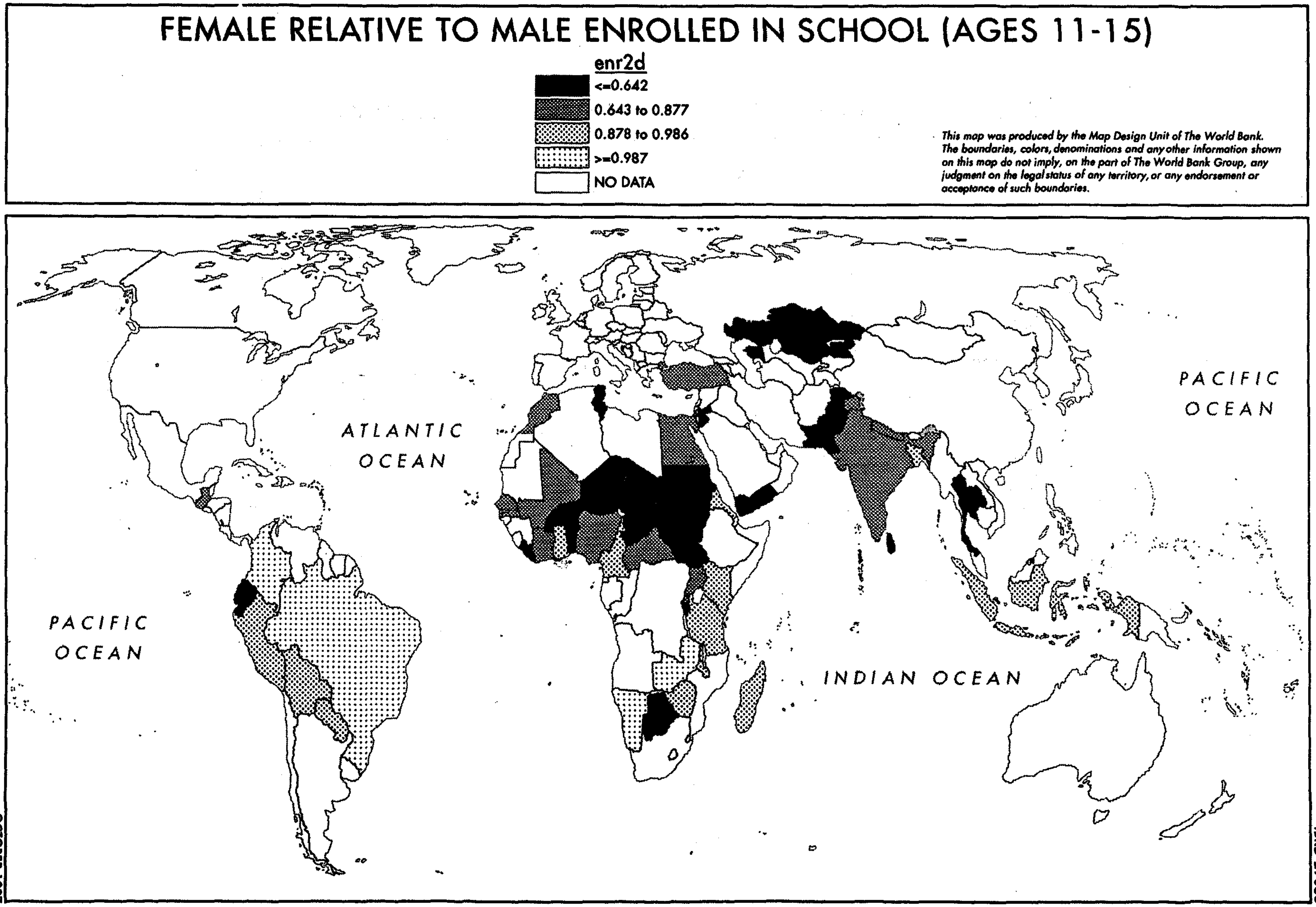

FEMALE RELATIVE TO MALE ENROLLED IN SCHOOL (AGES 11-15)
enr2d
<=0.642
0.643 to 0.877
0.878 to 0.986
>=0.987
NO DATA
This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.
ATLANTIC OCEAN
PACIFIC OCEAN
PACIFIC OCEAN
INDIAN OCEAN
OCTOBER 1997
IBRD 29038

Figure 3B

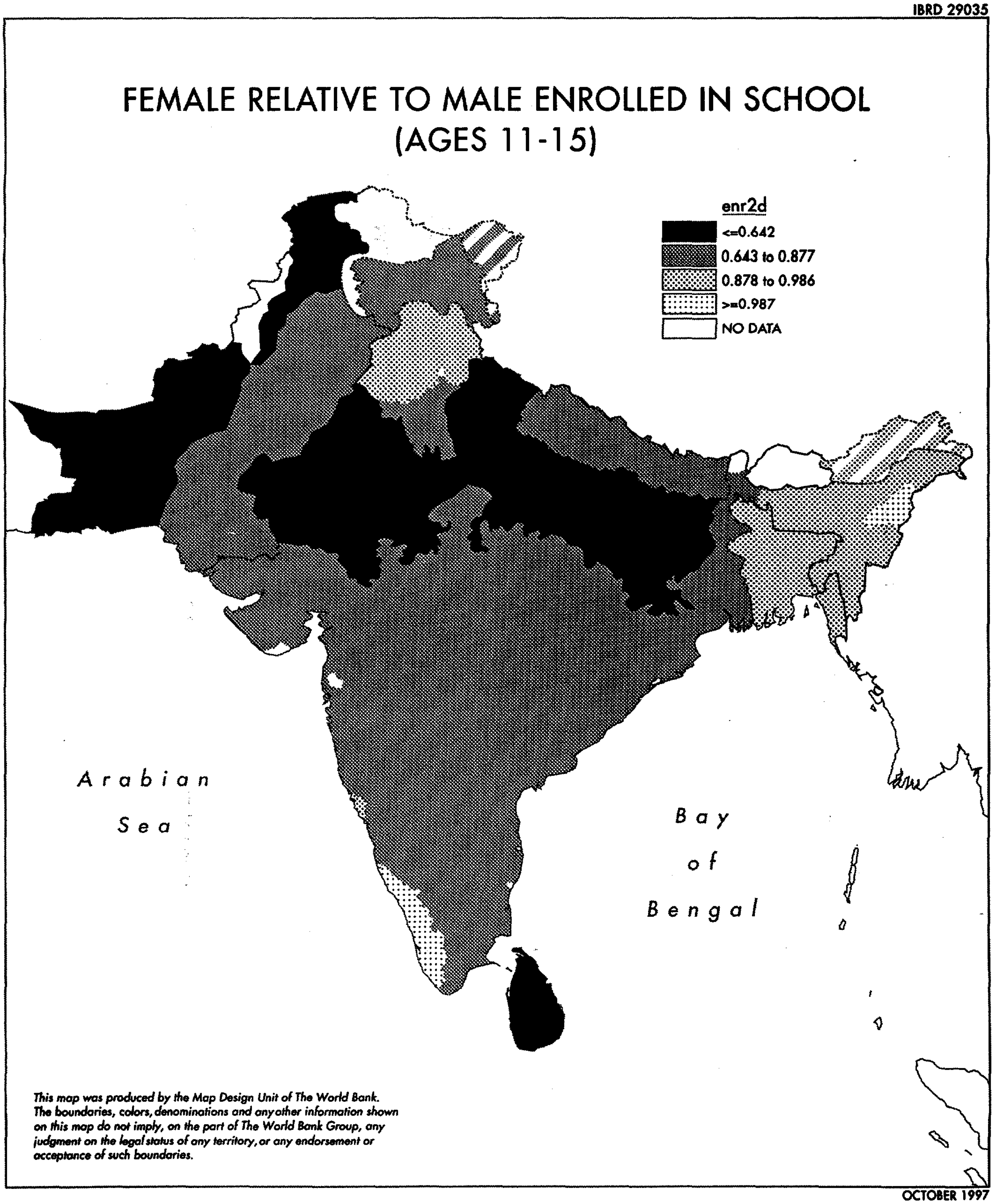
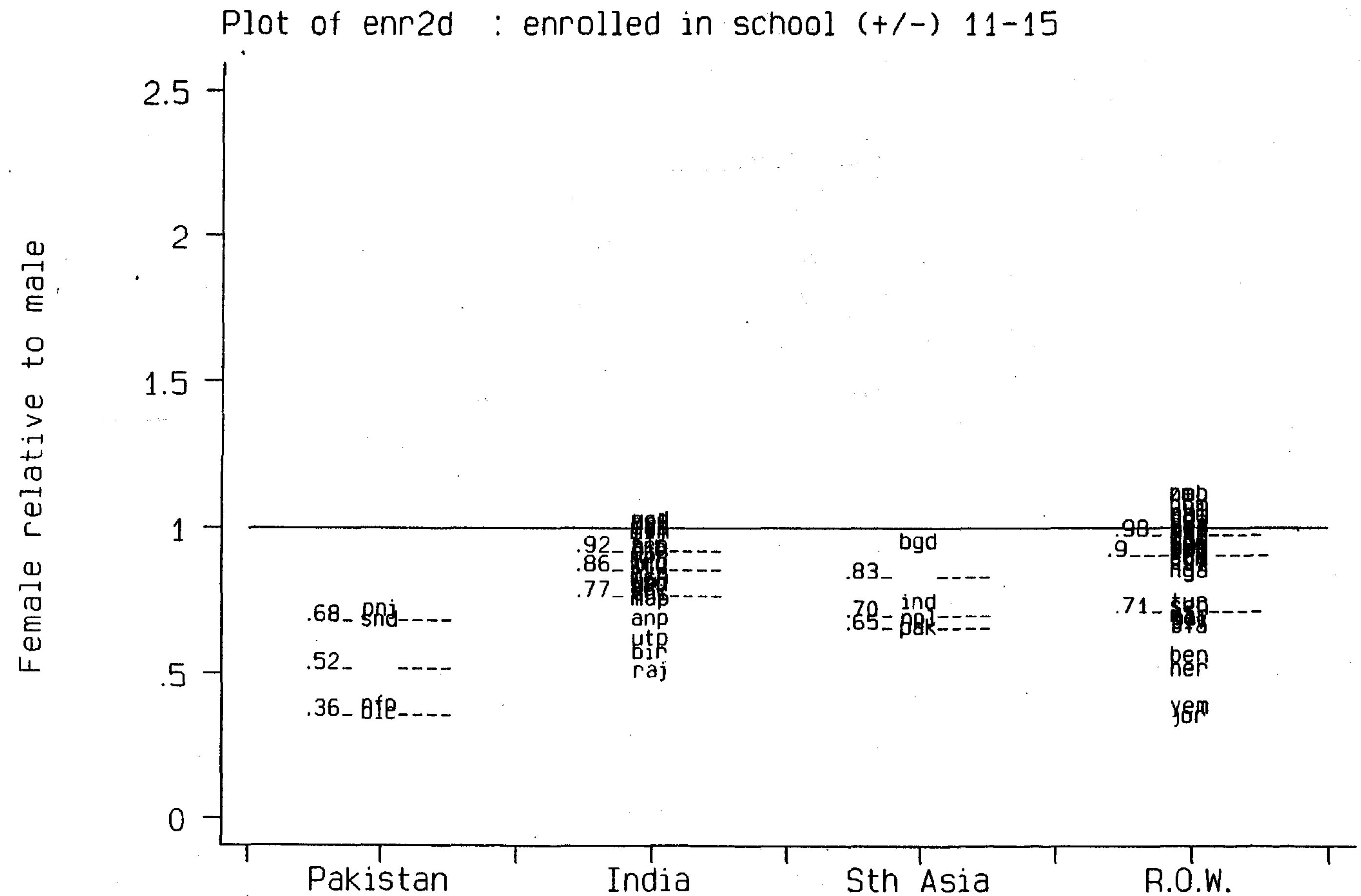

IBRD 29035
FEMALE RELATIVE TO MALE ENROLLED IN SCHOOL
(AGES 11-15)
enr2d
<=0.642
0.643 to 0.877
0.878 to 0.986
>=0.987
NO DATA
Arabian Sea
Bay of Bengal
This map was produced by the Map Design Unit of The World Bank. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of The World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.
OCTOBER 1997

Figure 3c



Plot of enr2d : enrolled in school (+/-) 11-15
Female relative to male
2.5
2
1.5
1
.5
0
Pakistan
India
Sth Asia
R.O.W.
.68
.52
.36
pnj
snd
.92
.86
.77
anp
utp
bih
raj
bgd
.83
.70
.65
ind
pak
.98
.9
.71
nga
tun
ben
ner
yem
jor

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